

Copyright Price

Ans.

Librarian

Uttarpara Joykrishna Public Library
Govt. of West Bengal

CALCUTTA METROPOLITAN EXPLOSION

Its Nature and Roots

by
SUNIL K. MUNSI



PEOPLE'S PUBLISHING HOUSE
New Delhi

July 1975 (P 75)

1975 SUNIL K. MUNSI

Price: Rs. 25.00

Printed by Tarun Sengupta at New Age Printing Press, Rani Jhansi Road,
New Delhi 110055, and published by him for People's Publishing House,
Private Limited, Rani Jhansi Road, New Delhi 110055.

To Vidya

*who had the enormous patience to listen to all my
drafts and suggest improvements and who found time
from her busy schedule to help me even in editing and
typing.*

PREFACE

The problems of Calcutta's growth have been discussed widely over recent years in the press, in parliament and through scholarly publications by Indian and foreign writers. But the state of urbanisation in West Bengal and the region constituting Calcutta's hinterland has received comparatively less attention. While preparing papers on various aspects of urbanisation in this part of India, I was slowly driven to the conclusion that this urban crisis has its roots in the particular history of this region and is generated by the nature of underdevelopment affecting it.

The papers compiled in this book appeared in various publications over a number of years: the first chapter on the economic development of West Bengal prior to Indian independence appeared in full in the *Selected Papers of the 21st International Geographical Congress*, Vol. 3, 1968; the second chapter on the nature of economic regionalisation appeared in part in *West Bengal*, Firma K. L. Mukhopadhyay, Calcutta, 1970; the third chapter on the urban stagnation in small towns appeared in the *Geographical Review of India*, September 1973; the fourth chapter on Calcutta metropolitan explosion and underdevelopment was published in a modified form in the *Marxist Miscellany*, No 4, New Delhi, 1973; the fifth chapter on spatial and temporal disparities of urban growth was printed in the *Geographical Review of India*, December 1972; and the eighth chapter on Farakka and the future of South Bengal appeared in part in the Bengali monthly *Bichinta*, July 1972. The sixth and seventh chapters were written entirely for this book.

I must express my gratitude to the organisations and publishers who helped in the initial publication of these papers, now being compiled in book form. The considerable interest shown by Shri Mohit Sen in the problem of Calcutta's metropolitan explosion and his encouragement are largely

MAPS AND DIAGRAMS

Economic regions of Bengal	36
Calcutta metropolitan district	75
Class I towns in the northeast, west and the south economic regions	81
Urban population growth during 1951-61	93
Workers employed in manufacturing industries	96
Length of surfaced roads	101,
Establishments run on electricity	103
Levels of urban development	105
Calcutta: 1961, functional amalgam	112
Calcutta: concentration of bustees	115
Calcutta: slope	120
The city and the region	129
The Hooghly river and its tributaries	143
Salinity of Hooghly water	146

INTRODUCTION

Metropolitan explosion in industrially developed countries is a phenomenon which has attracted considerable attention of all sociologists and planners not only as a subject matter for academic investigation but more for the solution of some of the most complex socioeconomic problems it has thrown up affecting life and work in all metropolises. Lewis Mumford called them the sprawling gigantism the bursting metropolitan containers. Over one hundred years of intense industrialisation lies at the back of this explosion whose stages of growth are best seen on the eastern seaboard of the USA where conurbations merge with one another to create a gargantua known as the megalopolis. Features of metropolitan explosion are in the main similar in all the world cities—overwhelming congestion, tremendous pressure on amenities, cultural and class segregation and polarisation with all the attendant social consequences. Industrialisation apart, the extremely rapid spread of urbanisation and the growth of metropolises together with their influence zones were aided by highways and automobiles, by a general upliftment in the living standard and mechanisation of agriculture. Metropolitan economy established its hegemony over all other economies through chain and mail-order stores, banks, petrol pumps and automobile dealers. These have resulted in a steady siphoning of population from the countryside into the metropolises, thus adding in a large measure to the natural increase in population by birth in these cities.

The problems of western metropolises have been gathering momentum for quite some time till the alarm began to be raised after the second world war. The race riots in the USA made people realise that things were not all that good in the US cities and that even New York had its slums

where poorer people, mostly belonging to the negro community, lived in terrible congestion and poverty. The transport bottleneck became an awesome phenomenon in all the world cities. Automobiles, which had assisted the growth process of these cities, were now choking them. Houses were in short supply. Cities were growing on all sides without any check or order. The city was fast losing its worth as a living space. Even as a place of work, it was becoming far too overcrowded. Social tensions were mounting up in otherwise peaceful western cities and bursting out time and again in the form of race riots, clashes between national groups, class battles and a general all-pervasive unrest among the youth.

These features of metropolitan explosion in industrially developed countries have of late made their appearance in some of the underdeveloped countries and India is certainly one of them. It is a common practice nowadays to explain away metropolitan explosion in India as a phenomenon similar to that in the developed countries, the only difference being that it has overtaken this country one hundred years after Europe or America. The postindependence industrial development is identified as the main force responsible for this rapid growth of cities and therefore the solutions sought are also similar to those chalked out in Europe or America, such as creation of a green belt around the city, development of satellite towns beyond the green belt, formation of city governments modelled after the London county council, and so on and so forth.

But can we really genetically group metropolitan explosions in developed and underdeveloped countries in the same category? If one assumes that India is taking to the road of urbanisation in more or less the same manner as Europe did one hundred years earlier one would fail to explain a phenomenon like Calcutta where the population size today is equal to that of Moscow or Paris. In an environment of economic growth and health Calcutta could provide accommodation to a much larger population. But even with a slow growth rate, Calcutta appears to be bursting at its seams. We have taken Calcutta as a subject of

scrutiny because it provides all the facets of a metropolitan explosion in India in the most exaggerated form.

Economic potentiality of Calcutta has remained stagnant for quite some years. The port, which controls one of the key functions of the city, has been handling over the years a declining quantity of goods. The engineering industry, once the pride of the country, is in the midst of serious crisis. The jute industry is certainly on the way out. Supply of jobs here is far less than the demand. But even then people come to Calcutta, maybe in smaller numbers, from its hinterland to make a living, because living in the countryside has become even more difficult for thousands of people who constitute the rural labour force. The small and medium sized towns of Calcutta's hinterland are hardly in a better position to offer employment. The growth of Calcutta's population is thus only partially due to the natural increase in the city's population but mainly due to the influx from outside.

We have no detailed record of this human flow into Calcutta. We only know that out of the 32 lakh people of the Calcutta municipal area about 7 lakh immigrated from East Pakistan, now Bangladesh, and about 14 lakh came from other states of India. The rate of in-migrants from the districts of West Bengal is anybody's guess. But they come, majority to stay on permanently and others to move back and forth with the tide of crop season and lean months. Only a few fortunate ones among the permanent settlers get employment; others take to commerce and miscellaneous services and about 50 thousand among them live on foot-paths.

Over half a million people commute to Calcutta everyday. This is based on checks on ticket sales of suburban bus and train services. But thousands more with petty or contraband merchandise smuggle into the city ticketless and swarm the pavements and kerbs throughout the day. Each crop failure in an area within the hinterland pushes up the curve of such a flow. Talk to any man in the street and you will get the confirmation of the statement that even in these days of soaring prices, Calcutta is a city of the poor for whose

needs a fairly widespread but low-priced commerce is in operation in all parts of the city. One can exist in Calcutta even by begging. And so they come to this city from 24 Parganas and Midnapur in West Bengal, from Ganjam and Balasore in Orissa, from Muzaffarpur, Bhagalpur and Darbhanga in Bihar, and Ballia in UP—in tattered clothes and with empty pockets. There are in Calcutta about 30 thousand hand-carts, 25 thousand rickshaws, which are manned by these people. Wayside tea-stalls, cigarette shops and eating places run with their labour. Domestic service, cheap and back-breaking, depends on their toil. It is they who provide the city's washermen, sweepers and most of the milkmen.

Such is the nature of Calcutta's in-migrants and one need not rub home the basic difference that lies between this fattered humanity and those who increasingly migrate to metropolises in industrially developed countries.

But this by itself does not explain the condition of civic services in Calcutta which on all accounts are not very far from a total breakdown. Calcutta corporation, which has authority over about 38 square miles of area, has an annual income of about 13 to 14 crore rupees from consolidated rates, octroi, taxes on trades and professions, etc. This income is showing a slightly upward trend in recent years but is nevertheless totally inadequate to meet the minimum requirements of even a slowly growing metropolis. The motor vehicles department of the Calcutta corporation has a fleet of 200 trucks to remove garbage but hardly 60 are daily on the road for want of repairs, as spares cannot be stocked for lack of money. Not more than two ambulances are daily in service for the same reason. Road repair work cannot cope with the need. One could go on endlessly with this list which is all too well known. The government has now stepped in to handle the situation before it goes totally beyond repairs. A Rs 150 crore metropolitan mass transit project in the form of a tube railway has been initiated. Another Rs 30 crore project will soon begin for construction of a second crossing on the Hooghly river. Rs 150 crore are being spent to renew the Calcutta metropolitan district's

water-supply and sanitation system, improve the roads and crossings and make the slums more habitable. The Farakka project is almost complete to increase the flow of water down the Hooghly river and thus save the port of Calcutta.

But this huge expenditure on the solution of Calcutta's civic problems raises three very important questions. Firstly, in a poor country like India, with very limited financial capacities at our disposal, can we afford to spend such a huge proportion of our budget for one single city, large as it may be? Secondly, our production base being what it is, can we allocate such large quantities of industrial products for civic developments without regard to other urgent requirements of national planning? Cement, for example, is in very short supply. What priority should be fixed in such a case when both irrigation and Calcutta's mass transit project place demands for huge quantities of cement? Or what should be the priority in the case of iron and steel materials which are needed for building factories, houses, bridges, railway lines as well as automobiles? And lastly, can urban redevelopment alone solve the basic ills of Calcutta when gross intraregional disparity in urbanisation puts Calcutta's primacy beyond all known limits?

The main cause of metropolitan explosion in Calcutta may be found in the moribund state of our agriculture and the general low level of urbanisation in the hinterland, the two basic realities which are so different from the industrially developed countries where the gigantism of the metropolis developed on the basis of technological progress and spread of urbanisation.

Metropolitan explosion under conditions of underdevelopment has therefore to be viewed as a particular phenomenon, a product of complex interplay of factors responsible for retardation of technological progress and urbanisation.

Calcutta was one of the eleven metropolises the world had already in 1900, together with such modern giants as New York, Berlin, Chicago, Tokyo, London and Paris. But this city on the Hooghly river grew as the English business on the subcontinent grew apace with increasing de-

mands on the most important colonial outpost of the British empire. When the British had just settled in Calcutta, in 1716, Hamilton estimated Calcutta's population as 12 thousand. In 1850, the chief magistrate estimated the figure at just below half a million, which went beyond the million mark in 1900 and today the agglomeration has already crossed the 7 million mark. Calcutta was primarily a port-and-administrative-cum-financial centre. It was the end of a siphon which sucked the vitals of our economy for the vitality and flourish of the economy of Great Britain. The port, the great railway terminals, the jute industry and the engineering industry—everything grew out of the pressing demands from London for more and more profit. And together with these Calcutta also enlarged itself, both in population and spread. Calcutta grew, but per-acre production of crops in her agricultural hinterland moved downward, repeated famines devastated the country and indigenous manufacturing centres lay in ruin with their craftsmen thrown out of employment. In about 1840, Sir Charles Trevelyan reported to the House of Commons select committee: "We have swept their manufactures; they have nothing to depend on but the produce of their land." Meanwhile the circulating native capital in Calcutta had risen to 16 crores between 1797 and 1801 and, with the growth of British trade in Calcutta, grew the wealth of its native bankers and banias, the brokers and gomastas.

But even towards such an indispensable outpost, the foreign rulers had an attitude based on short-term calculations of cost and benefit. Early in the history, as the East India Company's trade developed and the number of company's servants, civil and military, increased, the difficulties of finding room for all of them became more acute. Civic amenities needed so much just to keep Calcutta going began to appear slowly and haltingly. But even in these the consideration of immediate gain was so predominant that future consequences were seldom thought of. The origin of many of Calcutta's presentday civic problems may be found here.

This same attitude of plumping for quick returns affected everything that the British did here. Calcutta port is a classic

example. Calcutta port needed transport link-up with the rich hinterland. The traditional water-transport system which had grown in a deltaic region was too slow and hazardous for the British needs. Therefore this was totally discarded in favour of a more expensive but quick and sure railway system. This had two side effects. The flourishing riverside trade and craft-based manufacturing centres were ruined. Indiscriminate construction of railways, with the accompanying dams, embankments, culverts, etc. caused irreparable damage to the Hooghly-Bhagirathi river system, the effects of which are now being acutely felt in the ever-diminishing capacity of the Calcutta port itself. "Not only was nothing done to utilise and improve the original canal system, but railway embankments were subsequently thrown up, entirely destroying it. Some areas, cut off from the supply of loam-bearing Ganges water, have gradually become sterile and nonproductive; others, improperly drained, show an advanced degree of water-logging", wrote G. Emerson in 1931 in his *Voiceless Millions*. The net result was that channels, including that of Hooghly-Bhagirathi, were silted up and navigation became restricted very fast. We are now trying belatedly to repair the damage with the Farakka project, but the problem meanwhile has become so complex that none is sure if, even with Farakka, we shall be able to make up for what is lost.

This is the picture one gets of the nature and roots of the Calcutta metropolitan explosion—so different from the metropolitan explosions in the advanced west.

I have to admit that this study of the Calcutta metropolitan explosion, having been done in a piecemeal manner over the years in the form of papers that appeared in a number of journals, has many drawbacks, particularly in regard to coherence. But I have tried to improve upon the published papers with additions and alterations wherever this was felt necessary. One difficulty in such a collection of papers is that the data base belongs to different periods. Readers will find that census data for 1951, 1961 and 1971 have been used in different chapters. This was inevitable because the original papers were written over a period of

more than ten years. And for 1971 only provisional census data were available. Notwithstanding this I believe that the conclusions drawn remain valid even in the light of the latest available data. I hope that with all its limitations the book will provide the proper dimensions of the problems of Calcutta.

It should be clearly stated that the purpose of these papers was not to cry down the redevelopmental efforts that are at present undertaken in the city. Without some of these, civic and economic life in Calcutta will be difficult to continue. But my only purpose was to bring home the realisation that these measures alone can hardly be adequate to meet the challenge of Calcutta's metropolitan explosion. In fact, without other supplementary measures to upgrade the entire economy of this part of India, Calcutta's improvements might only add to her difficulties instead of bringing any relief.

ECONOMIC DEVELOPMENT OF WEST BENGAL PRIOR TO INDIAN INDEPENDENCE

West Bengal of today has passed through many changes of its boundaries, but the name 'Bangā' stuck to it since the early days of Indian history. It is believed that this name was derived from a Chandra king who ruled over this territory in the dim past. Raychaudhuri (1943) points out that from the 4th century A.D. onwards the epigraphic records enable us to trace the chief political or geographical division and administrative units of Bengal.

Abul Fazl (1596) says that the former rulers of Bengal raised mounds measuring some 10 m in height and 20 m in breadth throughout the state which were called 'al' (Sanskrit 'ali' means a mound of earth or ridge for crossing ditches, dividing fields and the like). From this suffix the name Bengal took its rise and currency. Some authorities however believe that the word 'Bangla' is derived from the Tibetan word 'bans' which means water-logged land. West Bengal of today is a name derived after the partition of the province in August 1947, when it emerged as a state in the Indian Union.

EVOLUTION OF AREA

One of the earliest and definite references to the location and area of Bengal is found in Greek and Latin writings. Diodorus wrote (Raychaudhuri, 1943) that India was inhabited by many nations among which the greatest of all was that of the Gangaridai (i.e. the people of the Ganga region). The region was separated from farther India, i.e. Indo-china, Burma, etc., by the great river, but it adjoined the rest of India. Historians agree that Diodorus here refers to the easternmost branch of the Ganga.

It is necessary to refer to Abul Fazl (1596) again for an idea of the area of Bengal in Akbar's empire. According to Abul Fazl the length of Bengal from Chittagong to Teligarhi near Rajmahal was four hundred kos (1 kos = 3.7 km). Its breadth from the northern mountains to the southern frontier of the sarkar (division) of Mandaran (now a village in Hooghly district) was two hundred kos and when Orissa was added to this state, the additional length was 43 kos and the breadth 23. It was bounded on the south by the sea, on the north and east by mountains and on the west by the present state of Bihar.

During the first half of the British rule in India up to the first Indian war of independence in 1857 the old historical province comprised the greater portion of northern India. According to Colebrooke (1884) the region governed by the British comprised Bengal and Bihar, a part of the adjoining divisions of Allahabad, Orissa and Berar. The province as it was till 1905 also called Lower Bengal, comprised Bengal proper (the division of Calcutta and four other districts), Bihar, Orissa and Chota Nagpur. In 1905, the first partition of Bengal took place and eastern Bengal was detached and united with Assam. In 1912 Bengal was separated from Bihar and Orissa and reunited with eastern Bengal. From this time onwards, Calcutta, which had continued to be the capital of British India, ceased to be so. The last partition of Bengal took place in 1947 when east Bengal and a part of north Bengal formed East Pakistan and the rest of the country came to be known as West Bengal, a state of the Indian Union. The last substantial change in the area of West Bengal took place in 1956 when the Islampur subdivision of Purnea district and a major part of Manbhum district, formerly parts of Bihar, were joined to West Bengal. The area became 87,617 sq km in 1961.

BENGAL IN THE 18TH CENTURY

Robert Clive as reported by the Industrial Commission (1918) on entering Murshidabad, the old capital of Bengal,

in 1757 found the city as extensive, populous and rich as the city of London with the difference that there were individuals in Murshidabad possessing infinitely greater property than in London.

Manouchi (Catrou, 1709), the Venetian who became the chief physician of emperor Aurangzeb, in the 17th century, describes that of all the kingdoms of the Mughal empire, Bengal was the best known. The prodigious riches exported to Europe from Bengal were proofs of its great fertility. It even surpassed Egypt in its products of silk, cotton, sugar and indigo. All things such as fruits, pulses, grains, muslins, cloths of gold and silk were in great plenty here. Bernier a French traveller, who visited Bengal twice around 1660, wrote about what he saw here just before the final break-up of the Mughal empire. In his opinion Bengal was richer than Egypt. Bengal exported at that time cotton, silk, rice, sugar and butter in abundance. It produced enough for its own consumption of wheat, vegetables, grains, fowls, ducks and geese. Bernier noted that Bengal had immense herds of pigs, sheep and goats. It had fish of every kind. An endless number of canals were cut in bygone ages from Rajmahal to the sea by immense labour for navigation and irrigation.

Elsewhere Bernier gives an even more detailed account of the economy of Bengal which is worth noting. After mentioning that Bengal exported rice to Machilipatnam, Ceylon and Maldive islands, sugar to the kingdoms of Golconda, Carnatic, Arabia, and even Iran, Bernier goes on to record that though Bengal did not yield as much wheat as Egypt did, nevertheless wheat was cultivated in sufficient quantity for the consumption of the country and for making excellent biscuits supplied to the crews of English, Dutch and Portuguese ships. He noted that vegetables together with rice and butter formed the chief food of the common people and were available at a very low price. Twenty or more fowls could be bought here for a rupee only. Geese and ducks were equally cheap. Goats and sheep also were in abundance and pigs were so cheap that the Portuguese settled in the country lived almost entirely

upon pork. Salted pork prepared here at low cost by the Dutch and English were supplied to their respective vessels. Fish of every kind was equally abundant. In short the rich exuberance of Bengal together with the amiable disposition of the people greatly attracted the Portuguese, English and Dutch in the 17th century. Bengal was a biggest producer of sugar, cotton and silk not only in India but also in the neighbouring kingdoms. Bernier was amazed to find the vast quantity of cotton cloths of every sort, which the Dutch exported from Bengal to different places, especially to Japan and Europe. The English, the Portuguese and the Indian merchants also handled trade in cotton and silk to a considerable extent.

Bengal was also the principal exporter for saltpetre, mainly produced near Patna and transported by boat down the Ganga. The Dutch and English used to send large cargoes to Europe and elsewhere. Besides, plenty of other articles such as lac, opium, wax, civet, pepper, drugs and butter were exported by sea to numerous places. Bernier further reports that on both banks of the Ganga from Rajmahal to the sea a number of canals were cut with immense labour for navigation, irrigation and water supply. Indian engineers were reputed to be superior to any other in the world in making canals. These canals were lined on both sides with towns, villages, extensive fields of rice, sugarcane, maize, vegetables, mustard seed, sesame and mulberry trees, but the most striking and peculiar beauty of Bengal was the innumerable islands of various size filling the vast space between the two distributaries of the Ganga, all of which extremely fertile, surrounded by woods and abounding in fruit trees and pineapples. Bernier also noted that several of the islands near the sea were abandoned by the inhabitants, being exposed to attacks and ravages of the Portuguese pirates, who laid these islands to dreary wastes.

THREE PERIODS OF BRITISH RULE

To trace the economic conditions of Bengal during the British rule, one has to make a little digression at first and

note the major landmarks during this rule which largely affected the economic set up of the region. The actual commencement of East India Company can be taken as from 1702 when different societies claiming monopoly of East India trade united together to form one single company. It may be noted here that the Fort William at Calcutta was established earlier in 1696. For just over the first one hundred years, up to 1813 the company ruled supreme without any hindrance from any quarter. During these one hundred years of direct plunder, several attempts were made in England to curb the monopoly powers of the court of directors of the company which did not succeed till 1813.

The company monopoly was abolished in 1813, and thence began for the next one hundred years the invasion of British industrial manufactures in India and the complete wrecking of the indigenous industries. Railways, roads, telegraph and postal systems were introduced to facilitate British commercial penetration deep into India. The rule of the crown replaced the rule of the company in 1858, a year after the first war of independence of India in 1857, but the policy of commercial penetration continued unabated right up to the end of the first world war.

The postwar period of about 30 years really marked the transition from the stage of free-trade industrial capital to the stage of finance capital. This continued together with trade and plunder till the very end of British rule over this subcontinent after the second world war. These changes in the pattern of British rule naturally had a tremendous impact on Bengal's economy—its agriculture, irrigation, transport, industries and trade. We shall dwell on them below.

Buchanan-Hamilton (1833) made a statistical survey of northern India around 1808. This survey throws a revealing light on Bengal's economic geography as it emerged after one hundred years of the company rule. Dutt (1901) gives a summary of the survey. Buchanan-Hamilton's account of a typical district of present West Bengal, namely Dinajpur, as summarised by Dutt is of interest. Buchanan-Hamilton observed that rice was the most important crop

of Dinajpur district (area 13,938 sq km, population 3,000,000) and some lands produced two crops of rice, one reaped at the close of the summer (aus) and the other in winter (aman). A third variety (boro) was also cultivated in small quantities and harvested in spring. In Dinajpur district higher lands which grew the aus variety of rice required manure and produced some winter crops such as mustard. The low lands growing aman hardly needed manuring and produced only one crop. Women husked the rice by a wooden lever some two metres long called dhenki, and one quintal of unhusked rice yielded a little over 70 kg of husked rice.

Wheat and barley crops were of lesser importance in Dinajpur, and marua (millet) was grown in poor lands. Among leguminous plants—kalai, khesari and masur (lintel) were the most common, the field-pea was the most common pulse. Mustard, rai (rape) and linseed were grown for oils. Among the other crops observed by Buchanan-Hamilton in Dinajpur some 15,000 ha were occupied by plantations of mango, jackfruit, tamarind, etc., and 33,000 ha were for green vegetables. Jute was grown on 5000 ha, cotton 3000 ha, flax 2000 ha and sugarcane 3000 ha. Tobacco occupied some 200 ha and the betel-leaf 80 ha. Indigo (2000 ha) and kusum (safflower) were grown for preparation of dye. Each cultivator was required by the European planter to grow indigo in a portion of his holding, a practice which prevailed for quite some time in Bengal. Some 5000 ha of fine lands, all within about two km of the Mahananda river, grew mulberry plants for feeding the silk worm. The company used to make advances for a great part of the cocoons produced by the cultivators. Buchanan-Hamilton also noted that irrigation of fields though not sufficient was in common use. Spring-fed artificial lakes in the district were numerous, and in case of failure of rains, recourse had to be taken to these lakes.

Buchanan-Hamilton also reports that there were some 480,000 ploughs in Dinajpur, and hence there were at least 960,000 working cattle for the ploughs, besides 336,000 milch cows. The pasture land comprised 676 sq km of

area inundated in wet season growing grass in the dry season, 572 sq km of woods and forests, about 780 sq km of barren lands and about 1300 sq km of land occasionally cultivated, four-fifths of which usually remained uncultivated. No rent was charged for grazing of cattle. According to Buchanan-Hamilton's survey agricultural holdings over 20 ha were considered very large ones, those of 6 to 8 ha were comfortable and easy, while the poorer section forming the bulk of the population had holdings of 2 to 4 ha only per household. The cost of cultivation usually was less than one-half the produce. The rent, always paid in cash, did not exceed one-fourth the produce.

Cotton spinning, which was the principal manufacturing industry, was mainly carried out by the womenfolk during leisure hours in the afternoons irrespective of their rank. The total value of raw cotton bought by spinners in a year in the district was Rs 250,000, the value of the yarn made was Rs 1,165,000 and the profit was therefore Rs 915,000. Four thousand looms were employed on weaving cloth of silk warp mixed with cotton wool called maldai after the town Malda. Each loom was said to make some 20 rupees worth of cloth in a month which Buchanan-Hamilton considered as an estimate on the higher side. Weaving of cloth of pure silk worth Rs 120,000 a year was confined to some 500 houses in Malda and environs. But Buchanan-Hamilton reports that cotton textile industry was of greater importance because the district had Rs 1,674,000 worth of cloth. The Mohammedan women of Malda were engaged in embroidering various floral designs, known as kosida having running patterns or chikon having detached floral designs on cloth. Some Mohammedan women also made silken threads.

Dyeing was equally important activity connected with the textile industry. Indigo, lac, kusum (safflower) and turmeric, moski, haritaki (myrobalan), moujista, and various flowers were the ingredients used for dyeing. Building, pottery, mat-making, bracelets, leather-work, carpentry, brick-laying, copper, tin and iron work, sugar-manufacture, and indigo-manufacture were among the other important in-

dustries. Buchanan-Hamilton also noted that indigo-manufacture had already given rise to complaints against the European planters for several reasons: (1) The planter considered the growers as his slaves and subjected them to torture, (2) the growers were cheated in measurements, (3) the farmer had to suffer financial losses, (4) the planters were insolent and violent, (5) the planters interfered with the collection of rents, (6) the planters belonged to ruling class, (7) they prevented the landlords to take their share, (8) the planters deterred farmers from the work of cultivation of crops according to their own choice.

THE FIRST HUNDRED YEARS

A great portion of the trade of Dinajpur district had passed from the hands of native traders (saudagars) to that of the company. Mahajans (small traders) with capital ranging from Rs 2000 to Rs 25,000 exported rice, sugar, molasses, oil and tobacco from Dinajpur, and imported salt, cotton, metal and spices. The number of permanent shops in the district was perhaps less than 2000, but shops of paikars (petty traders) in open markets were numerous. Gold had become scarce. In business transactions the kuldar (minted) rupee of Calcutta was the usual currency and cowry shells were largely used. Though in the rainy season boats reached most villages yet very little trade was carried on during the rains. In dry season goods were transported by bullocks. The charge for transporting a tonne of goods by boat from Dinajpur to Calcutta was around three and a half rupees only. For delivery of goods for some 20 km by land the charge was less than half a rupee.

During these 100 years, the company annually removed millions of pounds sterling of wealth to England as 'home charges' and as private remittances without return of goods to India. The governing objective of the merchant-'adventurers' was as Dutt (1940) points out to secure a supply of the products (spices, cotton goods and silk) of India and the East Indies for Europe. As time went on methods of

power could be increasingly used to weight the balance of exchange and secure the maximum goods for the minimum payment. Thus it is on record that the most plunderous methods were used by the company to secure the goods, the sole consideration being the amount of profit to be made and remitted to England.

The flourishing agriculture of Bengal rapidly fell a victim to this policy of collecting the largest amount of money in the quickest possible time. Between 1765 and 1777 lands were let out to the highest bidders by public auction. This led to overassessment, huge deficits, defaulting zamindars (landlords), deserting ryots (tenants) and absconding farmers. The devastating famine of 1770 in which 50 per cent of the agricultural population of Bengal perished was a direct result of this policy. Nevertheless, even during this year and afterwards the land revenue was not only rigorously collected but actually increased. Records show that year after the great famine more than a third of the agricultural lands of Bengal were deserted. For the next 15 years depopulation steadily increased. But between 1772 and 1789 collection of revenue continued to be ruthless and cynical through a combination of old zamindars (landlords) and new farmers over short-term settlements. There was another famine in 1787 and partial scarcity in 1788. Permanent settlement of land revenue was introduced in 1793. Permanent settlement admitted that the property in the soil was vested in the zamindars (landlords). The state demand was fixed at 90 per cent of the actual rent. In return for this exorbitant assessment, the permanent settlement offered an absolute property right to the zamindars in the prospective assets to accrue from the extension of cultivation and reclamation of vast areas of wastes and jungles then covering more than a third of the total area of the province as estimated by Cornwallis, the governor-general of India (Dutt, 1901). But as O'Malley (1941) noted the government gave extraordinary powers to the landlords under permanent settlement to safeguard the revenue. The landlords evicted tenants, seized and sold their property without recourse to courts of law. Thus

permanent settlement of land revenue was a complete failure. To the total ruin of Bengal's economy, Cornwallis introduced the British 'squirarchy' in the province.

The first 100 years of the company rule also totally wrecked Bengal's indigenous industries. All authorities agree that it was never the East India Company's policy to foster Indian industries. As early as in 1769 the company's directors wished the manufacture of raw silk to be encouraged in Bengal and that of silk fabrics discouraged. The company ordered that silk-winders should be made to work in the company's factories and prohibited them from working outside under severe penalties. This mandate had the desired effect and the manufacture of silk and cotton goods, which had ready markets in Europe and Asia, fast began to decline. On the other hand the revenues of the country were spent on the company's investments, i.e. on the purchase of Indian goods for export and sale in Europe without any commercial return. The regulation of 1793 provided as noted by Dutt (1901) that a weaver receiving advances from the company was prohibited to give to any other persons any goods or services under threat of prosecution in the Diwani Adalat (civil court); and on his failing to deliver the stipulated cloths, the British commercial resident was at liberty to use force and charge penalty on the price of cloth.

THE SECOND HUNDRED YEARS

The second hundred years of British rule in India were marked by continuance of direct plunder alongside the growth of trade and British commercial penetration. With the invasion of English industrial manufactures after 1813 wrecking of the Indian economy took place. Marx traced (Dutt, 1940) that between 1780 and 1850 the total British exports to India rose from £ 386,152 to £ 8,024,000 sterling. In 1850 India provided one-fourth of the foreign markets of British cotton textile industry which employed one-eighth of the population of Britain and contributed to one-twelfth of the whole national revenue. This is how the

second century of British rule was inaugurated in India. In 1813 the monopoly of the East India Company in trade was abolished. Private trade immediately increased in volume and the company's trade declined. The company's trade was abolished altogether in 1833. In all the inquiries conducted in England in this connection in 1830, 1831 and 1832, a lot of information was revealed on the economy of Bengal. During this century, the real beginning was made in jute, tea and coal industries. But on the other hand, the manufacturers of beautiful cotton fabric of Dacca were ruthlessly suppressed. Dacca muslin was not equalled in England. The Europeans could not cultivate cotton in Bengal, but a very fine variety was grown by the people near Dacca. The company exported cotton largely from Bengal. Cotton was conveyed from the interior to Calcutta in boats. Marx (1853) noted that from 1818 to 1836 the export of yarn from Great Britain to India rose by 5200 times. In 1824 the export of British cloth to India hardly amounted to 5,500,000 m only, while in 1837 it surpassed 58,000,000 m. During the said period the population of Dacca declined from 150,000 to mere 20,000 persons. The worst consequence, according to Marx (1853), was that the union between agriculture and manufacturing industry in whole of India was completely uprooted. Even the British governor-general in India reported in 1834-35 as quoted by Marx (1853) that the misery brought about by English cotton textile machinery hardly found parallel in history of commerce.

The raising of silk worms was practically confined to Bengal. The company had 11 or 12 factories in Bengal. The quality of raw silk had deteriorated, but the export had increased. And in the meantime, production by independent local manufacturers had been almost prohibited. The weaving of fabrics had been largely discontinued. The export of rice from Bengal increased, and by 1830 rice from Bengal in the husk was exported to the tune of about one thousand tonnes. The British had started importing indigo from India in 1790. The cultivation was carried on from Dacca to Delhi. It is recorded that Bengal had

about 400 factories, mainly in Jessore, Krishnagar and north Bihar. The best indigo soils were actually the best paddy lands subject to annual inundation by the Ganga. Sugarcane produced in Bengal was considered to be as good as those from West Indies, and some superior sugar had also been manufactured. But in Bengal sugar was subjected to an excise duty of 120 per cent.

In Bengal about 1600 ha had been laid out in coffee. The cultivation of tea, which was undertaken from 1835, sharply rose in the subsequent years. Actually first tea was manufactured in 1842 by the government plantation. Later the plantations were sold to private manufacturers. Sander (1895) noted that in Jalpaiguri district the beginnings of the tea industry were made in 1874-75, first leases were issued to 22 gardens in 1877. There were large coal-mines in Burdwan district which first began working some time about 1814 at Raniganj. But extensive operations began in 1825. Coal was principally used in steam engines. Thus as the railways grew the coal industry developed. Output of Bengal coal sharply rose from 1,950,861 tonnes in 1892 to 5,795,406 in 1901.

Jute was first utilised in England in 1820, and in 1832-33 the spinning of jute first began to give promise of commercial success. By the middle of the 19th century jute had become an important article of export. Since 1857 a number of factories were set up in Calcutta. Jute was grown in a few districts of Bengal. Dutt (1901) writes about the effects of this new article of export on Bengal's agriculture. From 1887 to 1890, when Dutt was in charge of the district of Mymensingh, the largest jute producing district, Bengal had nearly a third of the crop lands under jute. Average production of jute was about one million tonnes. One-half of this produce was exported to Europe, while the other half was used either for the making of homespun cloth or bags or in jute mills. There were 35 mills, 8218 looms and 171,148 spindles in 1901 and the number of looms and spindles nearly doubled in the succeeding years. The jute mills employed 64,700 hands.

The evidence submitted by Roy (1965) in connection

with the discussions leading to the revision of the East India Company's charter in 1833 may be recalled in this connection which throws some light on the conditions in Bengal. In Bengal people lived at that time mostly on rice with a few vegetables, salt, hot spices and fish. Roy however often observed the poorer classes living on rice and salt only. In provinces of upper India flour instead of rice was used and the poorer classes frequently used bajra and other millets. The Mohammedans in all parts took meat who could afford it. An adult in Bengal consumed, according to Roy, about 450 to 700 g of rice a day; in the upper India a larger quantity of wheat flour was taken. The Vaishya (trading community) and the Brahmins of the Deccan never took fish or meat. Roy also observes that people in Bengal generally went bare-headed unlike in upper India, the lower garment is loosely worn cloth (dhuti) falling down to the ankle, and poorer sections have a smaller cloth. The Mohammedans generally used the turban and were better clad. Richer sections of the people were dressed better.

After the first Indian war of independence in 1857, the British crown took over power from the company, but things did not change. Dutt (1901) laconically summarises the situation thus "within twelve years after the change in administration, the economic drain from India had increased fourfold. India suffered this steady and increasing drain and prepared herself for the frequent and widespread famines which marked the last quarter of the 19th century. They were the natural economic results of a continuous drain such as no country on earth could bear." It may be noted here that in the first half of the 19th century there were seven famines in India leading to the death of one and a half million people. In the second half of the 19th century there were 30 famines—6 between 1851 and 1875 and 24 between 1876 and 1900—in which 20 million persons perished. Bengal naturally had her share of the calamities.

It was during the second half of the 19th century that Indian railways were inaugurated and then were extended

obviously for two purposes. The first was strategic, enabling quick movement of the military for guarding frontiers or for maintaining internal order. The second was for opening up of the country. By this the British merchants wanted to connect distant parts of the country with ports in order to facilitate the sale of imported British manufactures and export of raw materials grown in the interior. The first railway line in Bengal was opened for traffic on 16 April, 1853 and in February 1855, the length opened was 195 km from Calcutta to Raniganj. Table 1.1 explains the very rapid growth of railways in India during the 19th century.

Table 1.1 Growth of Railways in India in the 19th Century

Year	Kilometres
1853	32
1863	4 104
1873	9 164
1883-84	17 426
1893	29 789
1901	40 834

The railways, opened by guaranteed companies, were slowly acquired by the government. The East Indian Railway was acquired in 1880, and the Eastern Bengal Railway in 1884. But while the old railways were thus purchased by the government, fresh guarantees were given for new constructing lines. The Assam-Bengal Railway formed in 1892 obtained a guarantee of 3 per cent to connect Assam with the port of Chittagong, obviously in the interests of the Assam tea gardens. Marx (1853) prophetically stated that the English intended to endow India with railways with the view to extracting cotton and other raw materials for their manufacturers. But with the introduction of railways in India which possessed iron and coal, different branches of industry were bound to develop in due course. The railway system would therefore become in India truly forerunner of modern industry, dissolving the traditional divisions of labour. Together with railways came introduction of telegraph and uniform postal systems, the development of roads

and waterways, introduction of European banking system, Anglicised education and the beginnings of attention to irrigation. It may be of interest to note in this connection that in 1881-82 the value of import trade by country boats into Calcutta was 11 million sterling and that of export trade was £ 4.5 million. Bengal was already well known for countrymade ships. The British began building small ships at Calcutta in late 18th century. Thus between 1781 and 1821 some 300 vessels ranging in tonnage from 60 to 1445 were built in Bengal.

Irrigation or railways was a longstanding debate in India; until in the late 19th century the British rulers realised that irrigation was equally necessary for further increase of revenue. In fact railways and irrigation were complimentary and not contradictory. Marx wrote in 1853 that the introduction of railways was evidently followed by extension of irrigation in India for irrigated lands paid three times as much in taxes, afforded ten to twelve times as much employment and yielded twelve to fifteen times as much profit as the same area without irrigation. During the Mughal period Bengal used to have long dykes for irrigation purposes. Abul Fazl (1596) at the time of Akbar's rule noted the dykes as a predominant feature of Bengal landscape. Many authors of course also recognised the military importance of these dykes. One European writer noted several remarkable 'causeways' which intersected the whole country and must have been constructed with great labour and cost. One such causeway ran from Cooch-Behar to the extreme limits of Assam and was in existence even when Mohammedans first came to India. Willcocks (1928) came across a monograph on irrigation works and irrigation in Bengal written in 1794 by several Englishmen in Calcutta, who observed that there were a number of dykes constructed with patient industry throughout Bengal to check inundation and reservoirs and dams constructed for irrigation. Minhajuddin (1260) noted that these embankments were constructed through the perseverance and forethought of Sultan Ghiyasuddin i Waz.

Though irrigation works were neglected at the beginning,

with the realisation that irrigation also 'paid' the British rulers undertook schemes to repair old irrigation canals and construct new ones. Thus in 10 years from 1870 to 1880, a sum of £ 11,851,193 sterling was spent on irrigation in India. In 1901-2, the area of land irrigated from government canals in Bengal proper was 33,338 ha. The area was mainly in Midnapore district irrigated by the Midnapore canal. Nevertheless the importance of the development of irrigation in Bengal continued to be underplayed till long after big irrigation schemes were being taken up in upper portions of India. This was partly because of the understanding that what Bengal needed was drainage and not irrigation and partly because irrigation investment in upper India paid immediate and richer dividends. Thus the major irrigation projects of the state with the exception of the Eden canal were undertaken to deny water to the land. Later in the thirties of the 20th century, the Damodar canal was constructed for irrigation but there were dozens of other schemes to drain the land of irrigation water. And lastly, the permanent settlement of land revenue put the responsibility of irrigation mainly upon the landlords who were incapable of looking after the old works, not to speak of undertaking new schemes.

The economic ruin of Bengal could also be seen in the decay of some 25 flourishing towns at the end of the 19th century. According to Census of India (1951) the reasons of the decay were: towns ceased to function as centres of trade, manufacture and industry, these activities shifted elsewhere to new centres, and a thoroughly new system of production strange to the genius of the country was introduced. Thus in Burdwan district Kalna, Katwa and Dainhat towns gradually decayed. Kalna, one of the principal river ports of the district, decayed as the Bhagirathi river silted up and the railways diverted the traffic. Katwa, where steamers used to plv all the year round, withered away for the same reasons. Dainhat, a centre of brass and bell-metal and weaving and an important river port, met also the same fate.

In Birbhum district, Suri used to manufacture palanquins

and furniture, Alunda town produced striped cotton table-covers and bedsheets, towels, white table-cloths, mosquito nets and other coarse cloths; Kalipur Karidha town was famous for tussore (wild silk) reeling and weaving and bafta (mixed tussore silk and cotton cloth). These prosperous settlements were erased out of the economic map of Bengal.

In Bankura district, Sonamukhi town had a large factory of the East India Company and a large number of weavers were employed in cotton-spinning and weaving. The introduction of English piecegoods led to the withdrawal of the company from this trade. Brass and bell-metal utensils, conch-shell ornaments were made on a fairly large scale at Patrasair town. These industries died out.

In Midnapore district, Ghatal town was well known for cotton-weaving, tussore silk cloths, bell-metal utensils and earthen pots. It was the port of Arambagh and Ghatal subdivisions. Chandrakona town was a flourishing trading centre as early as in the 17th century. Kharar town manufactured on an extensive scale brass and bell-metal wares. About these towns of Midnapore, Cummings (1908) wrote that the manufacture of brass and bell-metal utensils was carried on at Ghatal, Kharar, Midnapore, Chandrakona and Rajarampur. At Ghatal and Kharar the industry was said to be more highly organised than in any other part of Bengal. The entire village resounded with the beat of hammer on the bell-metal. They obtained raw material such as tin from Malaya and copper from Japan in large quantities. Some had more than 100 men in these factories, and it was said that out of a population of 9000 at Kharar, 4000 were metal workers.

At Arambagh in Hooghly district there are ruins of two indigo factories. Hooghly, once a very important centre, declined mainly because of the growth of Calcutta. In 24-Parganas district, Barasat and Gobardanga towns and in Nadia district, Birnagar, Chakdah, Krishnagar, Ranaghat and Santipur towns declined beyond recognition. Berhampore, Murshidabad and Jangipur towns were important centres of manufacture and trade in Murshidabad district, which failed to maintain their growth. Old Malda town in

Malda district was a centre of cotton and silk manufactures, which also followed the suit.

The development in the first hundred years and the targets of the British rulers were brilliantly summed up by the British governor-general, Dalhousie (1853), in his minutes on railways. He said that cotton, which was urgently needed for textile industry in England, could be supplied in plenty from India if the means of conveyance for it from distant plains to several ports were provided. Every increase of facilities for trade in India had been attended as observed by Dalhousie with an increased demand for articles of European produce in the most distant markets in the country and new markets were opening to the British in India which defied their imagination.

- BETWEEN THE TWO WORLD WARS

The last half century of British rule in India saw phenomenal increase of direct tribute from India to England. But together with this direct plunder and trade and commercial penetration, the development of railways in India laid the foundation of a new stage of development—the development of British capital investment in India. The capital had not been imported from England, but actually raised in India by various means and then written down as debt from the Indian people to Britain, on which Indians had thenceforward to pay interests and dividends. It is evident that by 1914 the interests and profits on invested capital and direct tribute considerably exceeded the total of trading, manufacturing and shipping profits out of India. The finance capitalist exploitation of India had become the dominant character in the 20th century. The first world war only accelerated the process.

Thus between the two world wars British investments in plantation, mineral-extracting industries and in light industries in Bengal rapidly rose. But the condition of agriculture, burdened with two hundred years of plunder and the permanent settlement of land revenue, continued to worsen. The Bengal Provincial Bank Enquiry Committee

Report of 1930 sharply brought out the situation in Bengal's agriculture in the following words: "The fertility of the agricultural land is deteriorating steadily on account of the absence of manure. The yield of the different crops has become less and less." The report gave detailed data to substantiate this statement which are worth recalling.

Table 1.2 Average Yield of Crops in Bengal (in kg per ha)

Quinquennium ending	Wheat	Winter Rice	Gram	Rape & Mustard
1976-7	897	1383	987	551
1911-12	965	1101	987	551
1916-17	774	1161	972	515
1921-22	771	1153	928	543
1926-27	808	1145	909	541
Decrease in 20 years	89	238	78	10

Census of India (1921) recorded that the cultivated area in Bengal worked out at only 9000 sq m per working cultivator. Census of India (1931) also drew an equally bleak picture of the province's agriculture and showed that of the total area cultivable only 67 per cent was actually under cultivation. If the total cultivable area were brought under cultivation and if improved methods of cultivation yielding an increase of 30 per cent were adopted it was clear that Bengal could support at its current standards of living a population very nearly twice as large as that recorded in 1931.

Sinha (1951) gives an idea of the static position of land utilisation in West Bengal area from 1905 to 1941 (Table 1.3). He quotes from the Agricultural Statistics for British India, 1938-39, which said that the outturn in Bengal had been reduced in respect of all the three varieties of rice, viz autumn, winter and summer rice, from 1146, 1244 and 1387 kg to 1024, 1154 and 1334 kg per ha respectively.

Table 1.3 : Land Utilisation in West Bengal (ha)

Year	Current fallow	New cropped	Rice		
			Bhadoi	Aman	Boro
1905-6	569,955	2,900,303
1914-15	933,874	4,014,040	2,677,042	2,677,038	20,841
1920-21	1,255,925	3,714,046	705,651	2,662,284	26,426
1930-31	1,465,766	3,462,736	766,678	2,421,681	16,592
1940-41	1,454,887	3,555,976	717,225	2,275,388	14,771

The Report of the Famine Enquiry Commission of 1945 noted that while government-sponsored irrigated area increased in acreage (38,000 ha), the area under irrigation from private works showed a marked decrease. Thus the overall curve in irrigation only showed a decline. The only major irrigation works constructed during this period were the Damodar canals in 1935. On top of all these came the famine of 1943-44 killing at least about two million people and devastating extensive areas of Bengal's countryside. The last period of British rule in the agricultural sphere of Bengal has been summarised by Sinha (1951) in the following words : "During this period (1) the real agriculturists were severely hit. They had not only lost in vitality but a very large number suffered economic degeneration. (2) Land was passing out of the hands of real agriculturists and there was growing concentration of ownership of land. (3) Debts had not increased very much, but that was only because there had appeared a tendency to sell out outright the land for meeting the liabilities instead of mortgaging the land. (4) Capital was scarce, practically the only source of rural credit being a new class of a few rich agriculturists who had managed somehow to add moneylending to their business. (5) Pressure of population also had increased very rapidly during the period in question—an inevitable feature of a semistarved population. (6) For this reason there was a heavy increase in the degree of dependence, particularly amongst the agricultural classes, and (7) there was an overall regression towards agriculture. (8) The middle classes showed tendencies of fast disintegration. Thus there was not only

a sharp decline in leadership and enterprise in the countryside but a substantial source of rural credit and capital for new development was practically lost."

Industrial development under direct British capital took place in Bengal during this period but the rate was not in the slightest degree comparable to other major European and non-European countries. Moreover, the whole development took place in a lopsided manner, principally in eight industries. A report of government of India (1921) states that prior to the first world war "certain attempts to encourage Indian industries by means of pioneer factories and government subsidies were effectively discouraged from Whitehall". After the first world war, a reversal of this policy was formally proclaimed. By 1927 we find the introduction of the policy of 'imperial preference' in face of universal Indian protests. Dutt (1940) points out that the real picture of modern India is a picture of what has been aptly called 'deindustrialisation', i.e. "the decline of the old handicraft industry without the compensating advance of modern industry. The advance of factory industry has not overtaken the decay of handicraft. The process of decay characteristic of the 19th century has been carried forward in the 20th century and in the postwar period."

During the period between the two wars British investments in tea industry sharply rose together with the number of tea gardens in Darjeeling and Jalpaiguri districts. In 1881 there were 202 tea gardens in these two districts which increased to 325 gardens extending over 78,890 ha. The growth of population in Asansol subdivision of Burdwan district during the period under consideration has been nothing less than phenomenal due to opening of new coal mines. Between 1872 and 1921 it was 68.7 per cent of the 1872 population. After 1921 a vast number of big and small industries grew up in the coal area which increased the population by 90.4 per cent in 1951 of what it was in 1921.

Jute industry which proved to be a gold mine for British investors continued to give fantastic profits. Johnson and Sime (1929) quote a report of the Dundee Jute Trade-Union Delegation to India in 1925 which says that "when reserve

funds and profits are added together the total gain to the shareholders in the 10 years (1915-24) reached the enormous total of £ 300 million sterling or 90 per cent per annum of the capital". By 1924 the jute industry of Bengal employed between 300,000 to 327,000 workers. The growth of Bengal jute industry can be gauged from Table 1.4 keeping in mind that this particular industry is almost totally concentrated on both banks of the Hooghly in the greater Calcutta industrial region.

Table 1.4 Growth of Jute Industry in Bengal (1879-1947)

Year	No of mills	Authorised capital (Rs million)	No of looms (000)	No of spindles (000)
1879-80 to 1883-84	21	27	5.5	88
1899-1900 to 1903-4	36	68	16.2	335
1909-10 to 1913-14	60	121	33.5	692
1925-26	90	214	50.5	1064
1930-31	100	236	61.8	1225
1937-38	105	249	52.4	1108
1946-47	106		66.0	1295

SOURCE : Government of India (1961)

In 1938-39 Bengal had a total of 1735 factories according to the figures published by government of India (1941). Out of these, 65 were government and local-fund factories and 1670 other factories. The total average daily number of workers employed was 562,791. Out of this total, over 50 per cent, i.e. 293,408 persons, were employed in jute mills and presses. Other major points of concentration of workers were general engineering—24,664, rice mills—18,635; tea—18,904, cotton spinning and weaving—31,447, railway workshops—26,764, ordnance factories—6845, and dock-yards, ship building and engineering—17,102. These together made about 20 per cent of the total. The remaining 25 per cent were distributed in various other industries. It is evident from these figures that just before the second world war jute, tea, cotton and rice, on the one hand, and

transport and munitions industry, on the other, constituted the main industrial sector of Bengal. All the basic and heavy industries without which a country could not conceive of progress were neglected.

Between 1854 and 1918 the major railway routes were opened in Bengal. The railway board grouped the railways into three classes according to gross earnings—(1) Rs 5 million and over, (2) from one to five million rupees, and (3) below one million rupees a year. According to this classification in 1929-30 Bengal had Assam Bengal, East Indian, Eastern Bengal and Bengal Nagpur railways in class 1; Bengal Duars, Darjeeling Himalayan and Howrah-Amra Light railways in class 2, Bankura-Damodar River, Barasat-Basirhat Light, Burdwan-Katwa, Kalighat-Fulta and a number of other railways in class 3.

During this period road building continued at some speed. On 31 March 1938 Bengal had 146,759 km of extramunicipal roads maintained by public authorities of which about 140,504 km were unsurfaced inferior type of roads including 106,538 km of village roads. These railways and roads linked innermost parts of the province with the port of Calcutta. The real hinterland of Calcutta extended far and wide. As has already been pointed out, by 1914 the interests and profits on British capital invested in India and direct tribute considerably exceeded the profits from trading, manufacturing and shipping. Moreover the British share of the Indian market fell from two-thirds to a little over one-third. Japan, Burma, Germany and the USA began sharing the Indian market together with Great Britain despite tariffs and imperial preference. India's own industrial production also made some headway. The collapse of the British export of cotton piecegoods to India largely explains this setback for Britain.

The position of Bengal in all these significant changes in India's foreign trade pattern can best be seen from the following table of total seaborne trade of Calcutta port in private merchandise. Thus during the 20 years after the first world war, both import and export trade of Calcutta port showed a decline.

The all-round stagnation of Indian economy is reflected in the none too dynamic a picture in the sphere of urban development in Bengal between 1901 and 1941. In these 40 years only about 25 new towns were added to the list of 74 towns which existed in 1901. Of these, 13 were in class III category (population 20,000-50,000) and 10 in class II category—(population 50,000-100,000).

Table 15. Seaborne Trade at Calcutta Port (Rs million)

	Preworld war (average)	first world war (average)	1938-39
Imports	648	773	742
Exports	950	811	569
Total	1598	1584	1311

SOURCE. Government of India (1941)

This is the background of what West Bengal is today. Only on this canvas can one draw a cogent picture of presentday geography of the state, its backwardness, growth and problems. Nature had endowed it with many resources including its industrious people, who are slowly but steadily changing the face of West Bengal for the geographer to note, comprehend and plan.

REFERENCES AND NOTES

ABUL FAZL (c. 1596), *Ain-i Akbari*, Vol. 2. Translated from Persian by H. S. Jarret and J. N. Sarkar, p. 129.

BERNIER, FRANCIS (c. 1660), *Travels in the Moghul Empire*, Vol. 2. Translated from French by Irving Brock (1826).

BUCHANAN-HAMILTON, FRANCIS (1833), *Geographical, Statistical and Historical Description of the District of Dinajpur in the Province of Bengal*, Calcutta.

CATROU, F. F. (1709), *The General History of the Moghul Empire Extracted from the Memoirs of M. Manouchi, a Venetian and Chief Physician to Aurangzeb for about 40 years*, John Bowyer, London.

CENSUS OF INDIA (1921), Vol. 5, *Bengal*, pts. 1 and 2.

—(1931), Vol. 5, *Bengal and Sikkim*, pt. 1.

—(1951), Vol. 6, *West Bengal, Sikkim and Chandernagore*, pt. 1a, Report, p. 414.

CUNNINGS, J. G. (1908), *Review of Position and Prospects in Bengal*.

COOLBROOK, H. T. (1884), *Remarks on the Husbandry and Internal Commerce of Bengal* in Census of India (1951), Vol. 5, *West Bengal, Sikkim and Chandernagore*, pt. 1c, Report, pp. 181-83.

DAIHOUSIE, LORD (1853), Minutes on Railways, quoted in Dutt, R. P. (1940), *India Today*, pp. 138-39

DUTT, RAJANI PALME (1940), *India Today*, V. Gollancz, London, pp. 99, 165.

DUTT, ROMESH (1901), *The Economic History of India under Early British Rule, 1757-1837*, 8th impression, K. Paul, Trench, Trubner, London, pp. 55-65, 246-54

—(1908), *The Economic History of India in the Victorian Age*, 3rd ed. Routledge & K. Paul, London.

GOVERNMENT OF INDIA (1921), *Annual Report, Moral and Material Progress of India*, p. 144

—(1941), *Statistical Abstracts for British India from 1909-30 to 1938-39*, p. 692.

—(1961), *India 1961*, Publication Division, New Delhi, p. 315.

INDUSTRIAL COMMISSION (1918), *Report*

JOHNSTON, T. AND SIME, J. F. (1925), *Exploitation in India*, pp. 5, 6

MARX, K. (1853), "The Future Results of the British Rule in India", *New York Daily Tribune*, 10 June, reprinted in K. Marx and F. Engels, *The First Indian War of Independence, 1857-1859*, pp. 18, 35.

—(1951), *Articles on India*.

MINHAJUDDIN-I-SIRAT (c. 1260), *Tabaqat-i Nasiri* Translated by H. G. Raverty (1881), p. 586, quoted in Census of India (1951), Vol. 6, *West Bengal, Sikkim and Chandernagore*, pt. 1a, Report, p. 73.

O'MALLEY, L. S. S (1941), *Modern India and the West*, London.

RAYCHAUDHURI, H. C. (1943), "Physical and Historical Geography" in R. C. Majumdar (ed.), *History of Bengal*, Dacca University, Dacca, Vol. 1, Chap. 1, p. 12, Chap. 3, pp. 41-43.

ROY, RAMMOHUN (1965), *On Indian Economy*.

SANDER, D. E. (1895), *Settlement Report of Jalpaiguri District*.

SINHA, BIMAL CHANDRA (1951), Land utilisation in West Bengal during the last thirty years, in Census of India (1951), Vol. 6, *West Bengal, Sikkim and Chandernagore*, pt. 1c, Report, pp. 297-304.

WILCOCKS, WILLIAM (1928), *Indian Engineering*.

UNDERDEVELOPMENT AND THE NATURE OF ECONOMIC REGIONALISATION

MODERN ECONOMIC REGION : THE CONCEPT

The concept of modern economic regions has grown much since the time when J. Russel Smith presented his thesis of 'human-use regions' of North America. The modern concept conceives an economic region as an economic area within an economic system which may have a relative or comparative cost advantage in the production of certain goods and services. A modern economic region specialises in the type of production in which it enjoys a comparative advantage, and exchanges its specialities with other complementary areas of the system.

The comparative advantage of an area is calculated on the basis of two sets of costs associated with its production and consumption activities. One set involves factors affecting the costs of production of a region, constrained mainly by the region's resource endowment and the skill of its population. The second set relates to the region's resource of an area and is a function of its location relative to other complementary and competing areas of the system. The comparative advantage of the region is achieved by minimising these two sets of costs.

Various areas in an economic system specialise and cluster in such a way that complementary exchange of their specialities would incur the lowest total production and exchange costs. These are economic regions.

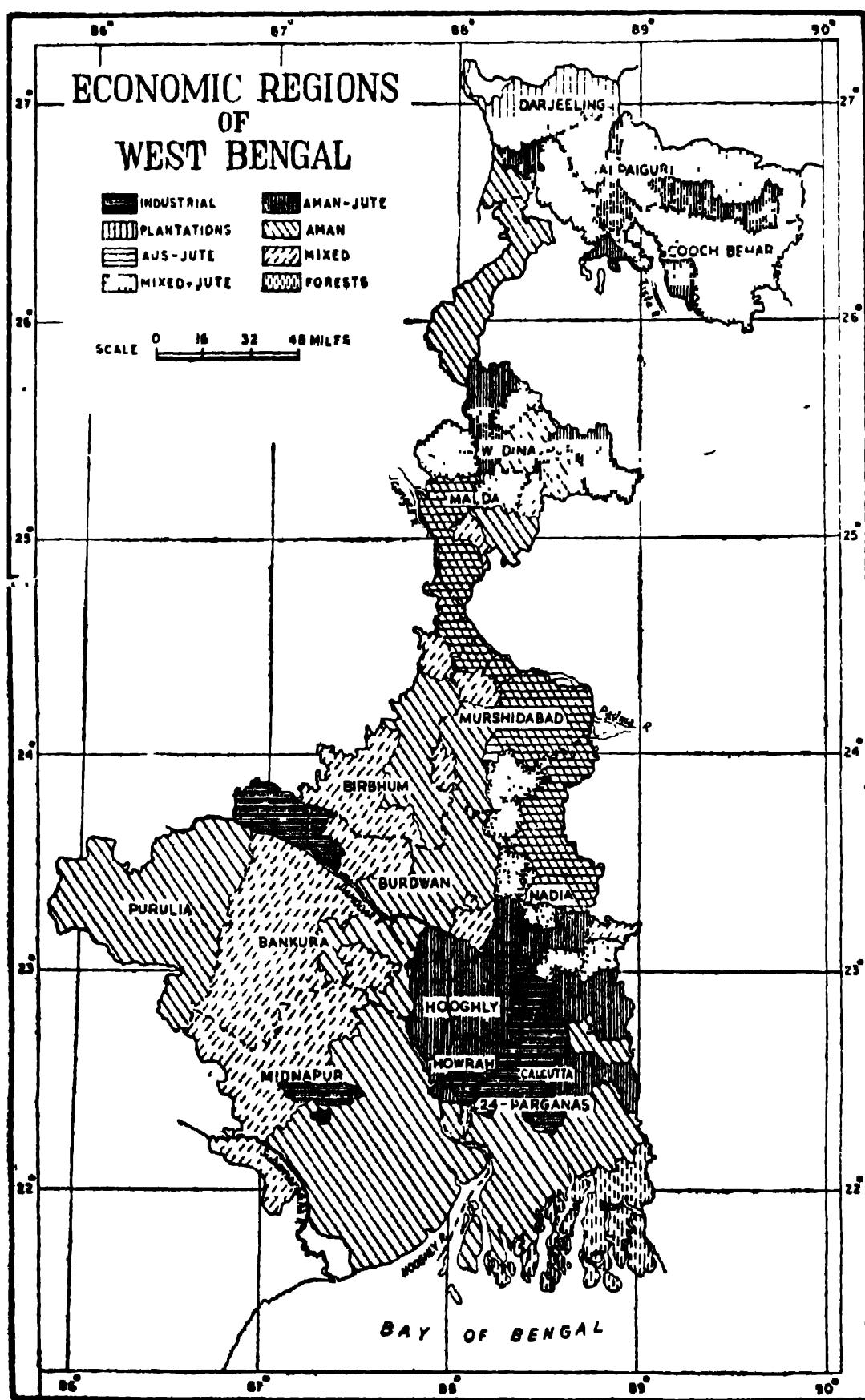
A region implies boundaries, but more precisely locality complexes. Today an economic region is considered to be a land with a definite psychological consciousness. A modern economic region is a modern economic locality, without definite boundaries, yet with a human character. It is one

of the modern man-made complexities. It is a definite form of economy and it has a psychological response. This is true both for agricultural as well as industrial economic regions. The modern industrial areas possess the same definite character, the same lack of boundaries and similar distinct psychological response.

PLANNING REGIONS VS ECONOMIC REGIONS

Many attempts have been made to delineate various types of regions within the borders of West Bengal. In particular, crop-combinations study has been a special point of interest. But crop-combinations regions are not economic regions—they are not meant to be so. Nevertheless, a study of land-use and crop combinations is an essential prerequisite in the study of micro-level economic regions in dominantly agricultural areas. Recently regional planners have put forward the idea of the necessity to demarcate planning regions of the state. In fact such planning regions for the state of West Bengal have already been drawn up. The requirements of planning being the objective, such planning regions depend more on the administrative boundaries of districts than on the existing specialisations. Therefore the present attempt to demarcate economic regions of the state of West Bengal has to advance mainly along a new line of approach.

In classifying West Bengal's micro-level economic regions it has been found necessary to distinguish first between the agricultural and nonagricultural regions of the state. The cardinal index for an economic region is the occupation of the people which reveals the resource endowment as well as exchange costs of a region. This together with density may give a clear picture of the definite areas where particular pursuits dominate the economy. But occupation alone cannot solve the problem, particularly in case of agriculture. Therefore production of the dominant crops, their various acreages under different police stations have been calculated in order to distinguish one region from another. The yield-figures being largely unavailable, acreages under dominant crops have been taken as the most suitable index.



THE PLANTATION REGION OF THE NORTH

Out of a total area of 87,616.77 sq km of West Bengal in 1967, there were 63 industrial police stations excluding the industrial (plantation) police stations of the Darjeeling and Jalpaiguri districts. In these two districts there are about 20 police stations where plantations dominate the economy. One can safely demarcate these from purely agricultural police stations, the number of which comes to about 200.

The countryside of these two districts, except the portion south of the Mahananda river of the Siliguri police station, is organised on an industrial economy of tea plantations. The land in these two districts is managed in large blocks under the tea estates. The economy here is based on tea plantations along with the timber needed for factories and plantations. Table 2.1 reveals how in some of the police stations of Jalpaiguri district the economy is entirely dependent on tea with overwhelming majority of people occupied in plantations.

Table 2.1 *Jalpaiguri District (1951)*¹

Police station	Total population	Population in tea estate	No of tea estates	Population in 4 nonagricultural livelihood classes
Kunargram	48,563	20,467	10	24,232
Alipur Duar	119,038	11,707	6	43,425
Kalchini	85,609	69,788	24	73,386
Malakata	55,700	10,539	5	15,894
Madarihat	59,486	40,012	18	47,466
Matiali	49,188	33,070	17	36,938
Mal	88,158	49,841	29	58,750
Dhupguri	110,910	49,339	22	56,666
Nagrakata	42,389	33,397	16	34,082
Mainaguri	88,315	1,062	2	16,161
Rajganj	51,723	2,350	2	8,356
Jalpaiguri	115,459*	6,320	6	53,708

*Including the population of the Jalpaiguri municipality (41,259).

Much of the land in the Darjeeling and Jalpaiguri districts, which is not actually under tea plantations, is under plantations of shade trees for wind-breaks, embankments, terraces and reserves for rotation of nurseries and bushes. The following police stations constitute the plantation-industrial region of these two districts: (1) *Darjeeling*: Darjeeling, Rangli Rangliot, Jor Bungalow, Sukhiapokhri, Mirik, Kurseong, Kharibari, Phansidewa and Siliguri (tea); Kalimpong and Garubathan (cinchona). (2) *Jalpaiguri*. Mal, Matiali, Nagarkata, Dhupguri, Falakata, Madarihat, Kalchini, Kumargram and Jalpaiguri (tea).

THE INDUSTRIAL REGIONS

The 63 industrial police stations (1951) outside the Darjeeling and Jalpaiguri districts fall into 3 well-organised regions.

Calcutta Industrial Region: For the sake of convenience, this region has been drawn on the basis of the boundaries of the Calcutta metropolitan district. The Hooghly-Howrah subregion on the western side of the Hooghly river covers 150 sq m while the Barrackpore-Calcutta-Budge Budge subregion on the eastern bank of the river has about twice that area. Engineering, jute textiles, cotton textiles, chemicals, rubber, food-processing and miscellaneous light industries make up the economic complex of this region. Industry, commerce and service completely dominate the occupational pattern.

The Durgapur-Asansol Region: This region in the Burdwan district comprises of Salanpur, Kulti, Hirapur, Asansol, Barabani, Raniganj, Jamuria and Ondal police stations with a total area of over 400 sq m. This is the second important industrial region of the state. Here the industries are iron and steel, machinery, coke, coal, paper, glass, ceramics, firebricks, oil mills, aluminium, bicycles, drugs, rice mills, locomotives, electrical wire, etc.

The Midnapur and Kharagpur region is an isolated territory. The area serves the agriculturally rich Midnapur district. Local industries include rice, wood, other agricul-

tural products, food-processing, railway workshops, machinery, etc. With the growth of Haldia, this region has the potentiality of expanding south and eastward.

THE FOREST REGION

On the whole forests play a very insignificant role in the economy of the state. This is clear from Table 2.2

The total working force of the state engaged in forestry is even less significant. The percentages of areas under forests and jungles to the total areas of various districts, however, are not negligible. The Darjeeling district tops the list with 46.07 per cent followed by 24-Parganas (31.14 per cent), Jalpaiguri (29.26 per cent), Bankura (20.39 per cent), Purulia (14.08 per cent), Midnapur (12.37 per cent), Burdwan (3.22 per cent), Birbhum (3.04 per cent), Cooch-Behar (2.40 per cent), Malda and West Dinajpur (0.27 per cent each) and Nadia and Murshidabad (0.20 per cent each). The average for the state is 13.66 per cent.

Table 2.2 West Bengal State Income and Contribution from Forestry and Forest-Based Industries²

Year	Forestry sector	Forest-based industries	Total state income	(Rs million)
				% of 2 and 3 to 4
1959-60	11.5	53.1	9699.2	0.67

As has been mentioned earlier, in the Darjeeling and Jalpaiguri districts the forests play a subservient role to tea plantations and as such cannot be treated as a distinct region with an independent economy. Exclusive forest economy dominates only in the south-eastern portion of the 24-Parganas—in the Sunderbans. At present the total forest area in the Sunderbans is 1646 sq m out of which 1630 sq m are reserved, 15 sq m are protected and about 1 sq m is unclassed state forest. The 1646 sq m of the total forest area include 687 sq m of water area and 59 sq m of sandy chars. Therefore the actual area under forests

is only 900 sq m. Police stations which partly or wholly belong to this region are Sandeshkhali, Mathurapur, Canning and Jaynagar.

THE AGRICULTURAL REGION

The agricultural region of West Bengal can be divided into five distinct belts or areas running more or less in a north-south direction. These are : (a) *autumn paddy-jute area*, (b) *mixed paddy-jute area*, (c) *winter paddy-jute area*, (d) *winter paddy area*, and (e) *mixed paddy area*.

It may be noted that for autumn and winter paddy 70 per cent or more of the total paddy area given to any of the two crops has been taken as the indicator of the absolute predominance of the crop over the region. 31 to 69 per cent sharing of the total paddy area between the two paddy crops has been taken as the indicator of mixed paddy economy.

In Burdwan, winter paddy or aman occupies about four-fifths of the cropped area. Small quantities of early paddy (autumn paddy or aus) are also grown. In Birbhum, more than half the cultivated area is under winter paddy. Bankura is more a mixed paddy area with both aman and aus having large share of the total cropped area. In the Midnapur district aman constitutes over 90 per cent of the cultivated area. Aman paddy is the most important crop in Hooghly. About 80 per cent of the 24-Parganas grows aman paddy. Nadia grows more aus than aman; jute is also a dominant crop. Murshidabad is another district where mixed paddy cultivation predominates together with jute. All the three varieties of aus, boro and aman paddy are cultivated in Malda with aus dominating in the western police stations, while aman occupying major areas in the east. Jute is an important crop here. West Dinajpur is predominantly an aman producing area. In Jalpaiguri the acreage under aman is greater than that under aus. Jute is an important crop here also. Cooch-Behar is a mixed paddy area with jute occupying increasingly more land and

area under paddy cultivation diminishing. Purulia has 447.1 thousand acres under aman, 7.4 thousand acres under aus and 1.4 thousand acres under jute, clearly indicating that this is mainly an aman area.

It is clear from the above statements that jute and autumn paddy are concentrated in the same area (except in the Bankura and Birbhum districts)—viz western Malda, eastern and central Murshidabad and Nadia. This area can therefore be conveniently classed as autumn paddy-jute area. Requirements of aus and jute are very similar and as such land under one crop may very well grow the other.

The winter paddy area occupies the heart of southern West Bengal and continues into northern West Bengal through eastern Malda, West Dinajpur and southern Jalpaiguri. This is the single biggest agricultural area of the state.

The winter paddy-jute area lies in a narrow belt along the eastern margin of the winter paddy area in southern West Bengal.

The western mixed paddy area covering most of Bankura, part of Birbhum and eastern Midnapur continues in northern West Bengal through Malda and Cooch-Behar. It includes however two large patches of autumn paddy areas. These areas have been ignored in order to draw a coherent regional picture for the state.

The eastern mixed paddy-jute area is a narrow belt lying between the winter paddy-jute area and the autumn paddy-jute area mainly in Nadia and Murshidabad, and small portions of eastern Burdwan and northern 24-Parganas.

It has not been possible to get a very clear picture for Purulia, where police-station-wise breakdown of land-use figures is not available. Nevertheless the district figures for Purulia clearly indicate that it is dominantly an aman producing tract, with certain mixed paddy areas on its eastern margin. Therefore the western mixed paddy region is bordered on both sides by winter paddy regions.

LAND OF SUBSISTENCE AGRICULTURE

The preceding discussion on the micro-level economic regions of West Bengal indicates that the state's land-use is overwhelmingly dominated by agriculture and that too by single crop cultivation of aman. When the British quit India, they left in West Bengal two industrial enclaves in the midst of vast stretches of subsistence agriculture. Of these one was in north Bengal in the Jalpaiguri and Darjeeling districts where tea plantations were concentrated. The other was around Calcutta. Since then one other industrial enclave has grown in the coal belt of the Burdwan district between Durgapur and Asansol. The tea plantations were as foreign to the region around them as the British to India: the capital came from British investors, indentured labour came from central India, machineries came from Great Britain, manufactured tea went to the London auction market and the profits also went with it.

The Hooghly-side industrial enclave extending over 30 m on the banks of the river had thrived on the basis of one-way relation with its hinterland: the hinterland supplying raw materials and labour to the export-oriented jute industry or ancillaries to textiles, transport and construction industries.

The Asansol-Durgapur complex, initiated by public policy, has yet to show any sign of integration with the regional economy.

The rest of West Bengal, including the small and medium urban centres, is actually a land of subsistence agriculture where jute is the only feeble sign of any commercialisation. The presentday diversification has only meant introduction of rabi crops in a few areas after aman cultivation during the kharif season.

Going back in history will show that the existing picture of land-use is not substantially different from what obtained twenty years earlier. In 1949-50,³ out of a net cropped area of just above 11 million ha, aman occupied a little over 8 million ha while aman, bhadoi and boro together occupied 9.4 million ha. The rest was devoted to miscellaneous crops

including jute. Districtwise breakdown of figures is given in Table 2.3.

Table 2.3. Land Utilisation in West Bengal, 1949-50 (in acres)

District	Current fallow	Net cropped area	Area under rice		
			Bhadoi	Aman	Boro
Burdwan	58,300	1,180,500	54,900	1,031,600	2,300
Bulbhum	23,500	796,800	114,000	677,500	—
Bankura	220,100	858,100	171,100	646,200	200
Midnapur	102,000	2,304,900	110,200	2,023,900	1,300
Hooghly	11,900	593,800	24,600	444,500	3,000
Howrah	7,600	252,500	2,200	214,200	2,000
24-Parganas	71,000	1,482,200	83,900	1,213,200	200
Nadia	109,000	670,300	285,500	231,000	400
Murshidabad	34,000	1,005,200	215,800	444,700	4,200
Malda	85,400	657,400	129,000	277,800	23,600
Dinajpur	77,100	633,800	52,600	521,900	300
Jalpaiguri	98,800	629,500	28,800	408,700	—
Darjeeling	38,800	216,000	—	—	—

Twenty years later, rice accounted for more than 70 per cent of the total gross cultivated area of 70 lakh ha in West Bengal. Boro rice and wheat have made a dent in the monopoly of aman rice but even in 1970-71 their coverages were only 1.5 and 3.4 lakh ha or 2.1 per cent and 5 per cent respectively of the total gross area under cultivation.⁴

These land-use figures reveal only one side of the picture. On the other side is the "extremely low level of productivity, as well as wide fluctuations from year to year, which are the two main manifestations of backwardness of agriculture in this state".⁵ Between 1955 and 1965, per-acre increase in rice output in the state had been almost the lowest, only 7 per cent. The stagnation in agriculture is underscored by the fact that though about 87 per cent of the acreage in the state is devoted to foodgrains, as against the national average of about 75 per cent, there has always been a large gap between requirement and supply. One of the consequences of the low and uncertain productivity has been the attempt to extend the cultivated area even by reducing forest land requires for, among others, checking soil erosion.

Such unplanned extension of cultivated land has eventually led to rapid silting of rivers.

THE BIGGEST BOTTLENECK

This appalling state of West Bengal's agricultural land-use and production has been ascribed by the State Planning Board to "the biggest bottleneck in the technological field"⁶: lack of perennial irrigation facility. State's irrigation has been a low priority ever since the British days. The potentials of gravity-flow irrigation are even today utilised mainly during the kharif season (93 per cent) which shows that "gravity flow irrigation is abjectly dependent on rainfall".⁷ The situation in regard to lift irrigation, which may supply water to the rabi and prekharif agriculture, is no better. It is not surprising therefore that in spite of some growth in rabi cultivation, agriculture in West Bengal still remains subsistence monoculture of paddy. The State Planning Board says that "even the most basic of the technological prerequisites for green revolution is as yet virtually absent in West Bengal" (Table 2.4).⁸

In a situation of such stagnation of agriculture, it is not surprising to find that "in 1951, 34.8 per cent of the people of West Bengal were employed. The corresponding proportion in 1971 was only 28.4 per cent."⁹ It is also not difficult to presume that the lion's share in unemployment went to the agricultural sector. It was in this background that the State Planning Board had to say that "one of the important reasons for the crisis in industry in West Bengal lies in the backwardness of our agriculture. Contrariwise, backwardness of our agriculture is due to the nature of industrial complex we have inherited and the particular type of socioeconomic institutional setup associated with it."¹⁰

Of the above 18.82 lakh ha of gross irrigated area, 7.37 lakh ha, covered by private canals and tanks, are based on old records and their real command area now is not known. How much of the gravity-flow irrigation area, which depends on rainfall, gets upset by drought or flood hazards are also not known. Again 2.13 lakh ha, or only 3 per cent

Table 2.4: Gross Command Area by Source of Irrigation in West Bengal, 1970-71

	(lakh ha)
1. Gravity flow irrigation (DVC, Mayurakshi, etc)	7.84
2. Lift irrigation .	
a) Deep tubewell	0.91
b) River lifts	0.61
c) Shallow tubewell	0.61
3. Private canals	3.99
4. Private tanks	3.38
5. Private wells	0.16
6. Miscellaneous	1.32
Total	18.82

of the total gross area under cultivation, covered by lift irrigation can be said to be under perennial irrigation, required for prekharif and postkharif crops, which are significantly more productive than kharif crop and form the technological basis for green revolution. The gravity-flow irrigation which is as yet the single biggest source of irrigation in West Bengal supplies 93 per cent of its water during kharif season and only 7 per cent during the rabi season. This source of irrigation is thus mainly useful for protecting the kharif crop and not for multiple cropping. It may therefore be said that even the most basic of the technological prerequisites for green revolution is as yet virtually absent in West Bengal.

REFERENCES AND NOTES

1. CENSUS OF INDIA (1951), *West Bengal*, district handbooks, Jalpaiguri.
2. WEST BENGAL GOVERNMENT (1964), Forest Directorate, *West Bengal Forests*, centenary commemoration volume, p. 218.
3. SINHA, BIMAL CHANDRA (1951), Land utilisation in West Bengal during the last thirty years, in Census of India (1951), Vol 6, *West Bengal, Sikkim and Chandernagore*, pt 1c, Report, pp. 297-304.
4. GOVERNMENT OF WEST BENGAL (1973), State Planning Board, *Comprehensive Area Development Programme; a new strategy for development*, p. 7.

5. Ibid, p. 5.

6. Ibid, p. 9.

7 GOVERNMENT OF WEST BENGAL (1972), State Planning Board, *West Bengal's Approach to the Fifth Five Year Plan (1974-79)*, p. 43.

The Approach Paper critically assesses the achievements in irrigation in the state and notes the following main features: (a) absence of any irrigation survey in the state during the last 28 years makes it difficult to get any clear picture, (b) the potentials of gravity-flow irrigation are limited to kharif and rabi seasons alone—the ratio between the two being 93.7 per cent for kharif and the rest for rabi, (c) tubewells are better suited in the sense that they provide irrigation during prekharif, kharif and rabi seasons in the ratio of 22.36:42; (d) the progress of lift irrigation clearly shows inefficient return of investments, (e) there is heavy wastage due to absence of field channels and the construction of gravity-flow channels without any lining; (f) there is gross interdistrict disparity in the development of irrigation potential, and (g) the executive machinery of the agricultural department needs considerable strengthening.

8 *Comprehensive Area Development Programme*, op. cit., pp. 9-10.

9 *West Bengal's Approach to the Fifth Five Year Plan*, op. cit., p. 133.

10. Ibid, p. 9.

AN INQUIRY INTO URBAN STAGNATION IN THE SMALL TOWNS

No accepted general standard has yet been evolved to define and classify the towns of India on the basis of their functions. The definition of Census of India (1961),¹ which classifies towns on the basis of population is the only standard to go by. The small towns of such a definition are taken to be those with population ranging between 5000 to 19,999.

THE AMERICAN PARADIGM

These towns include municipalities, nonmunicipal towns, cantonments, towns administered by town or union or station committees. The towns are popularly known as market centres, though they are vastly different in their character and functions from the market centres of Germany, the USA or other industrially developed countries. A comparison of the characteristics of such towns of India and of the USA can bring out the difference in obvious manner.

Berry (1967)² has made a rank-size classification of the US urban places on the basis of studies on Iowa. The following picture emerges from this study :

Table 31: Rank-size Classification of US Urban Places

Urban place	Approx. popula- tion size	Order of activities performed (these terms have been used by some authors and referred to by Berry)
Hamlet	100	—
Village	500	local convenience centre
Town	1,500	full convenience centre
Small city	6,000	shopping goods centre
Regional city	60,000	speciality goods centre
Regional metropolis	250,000	secondary wholesale centre
National metropolis	Over one million	primary wholesale centre

According to Berry, hamlets have up to 100 population, but seldom more than four or six with usually one or two stores, such as a general store, farm elevator, gas station, roadside restaurant, or a bulk fuel depot. The villages have approximately a population of 500. In them are found 20-25 different kinds of retail and service business and nearly 40 different stores. A maximum market area approximates 180 sq km and in this area they reach another 500 to 600 people, so that the total population served is 1100-1200. The third level is occupied, according to Berry, by towns with population of about 1500. They perform nearly 50 different kinds of business from nearly 100 establishments. In three towns studied by Berry in 1960, total taxable sales were to the tune of \$ 2 to \$ 2.5 million. Their maximum reach extended outward to no more than 13 km, to a market area of 500 sq km containing additional 2500-3000 consumers, or a total 4000 to 4200 people served. In addition to the activities performed by villages, they provided such others as: hardware store, furniture and appliance store, complete drug store, doctor, dentist, dry cleaners, bank, insurance agent, and funeral parlour. The fourth level of the hierarchy includes small cities. Berry examined two such county seats and noted their characteristics: population—6500-6800; 90-92 kinds of business; 312-411 establishments; maximum reach—32 km, trade area of 2600 sq km containing more than 20,000 additional customers; total population served approaching 30,000; sales in 1960 between \$ 14-16 million. In addition to the activities provided by the towns, they offer such others as: country government offices, sales of jewellery, shoes, clothing of all kinds from both specialised stores and junior department stores, florist, liquor, ethical drugstores, movies, newspaper, sale of used and new autos, auto accessories and the like. I have refrained from discussing the characteristics of the other three levels as they are much beyond the small town classes of India. Berry also notes that the size of small cities may vary widely with specialised functions related to the geography of production.

A long summary of Berry's findings has been given to

show that it is rather impossible to find any equivalence between Indian small towns and those of the USA and, as we shall see later, this is not just in relation to population size, but more in regard to functions. Indian small towns with population between 5000 to 19,999 can hardly offer any discernible size class differences in levels of functions except in detail. Therefore to study them together as small towns may be more relevant in the absence of a proper hierarchy of nodes and subnodes in India's urban development, and particularly in the absence of hierarchy lower down in the sphere of small towns.

A PROFILE OF WEST BENGAL

In 1961 West Bengal had 109 such small towns. Howrah and 24-Parganas had the largest numbers—21 each, while Darjeeling and Malda had the least, one each. The ratio of the number of small towns to size of district is most favourable for Howrah and the least for Malda. Adding the scores for total area, the number of small towns and sq km of area per small town in the district (density,) a gradation list, though somewhat arbitrary, may be prepared to indicate the relative position of each district of West Bengal in respect of small-town development: such a ranking places the districts in the following order: Howrah (1), Nadia (2), Hooghly (3), Cooch-Behar (4), 24-Parganas (5), Burdwan (6), Murshidabad (7), Birbhum (8), Midnapur (9), Jalpaiguri (10), West Dinajpur (11), Purulia (12), Bankura (13), Darjeeling (14) and Malda (15). Thus, while for each 3605 sq km Malda has one small town, Howrah has a small town in each 69.8 sq km area. Howrah is the most urbanised district of West Bengal outside Calcutta, followed by Burdwan, 24-Parganas and Hooghly. But from the point of view of small-town development, Burdwan has 1 in 700.7 sq km, 24-Parganas has 1 in 695.3 sq km and Hooghly has 1 in 627.8 sq km.

Of the 109 small towns of West Bengal in 1961, (Table 3.2) there were 23 municipal towns, 78 nonmunicipal towns, 1 cantonment, 1 town run by a station committee, 5 towns run by town committees and 1 town by a union

committee. Of the total number of small towns, 38 were born before 1941, 12 between 1941-51 and 59 between 1951-61. This itself is indicative of the very slow growth of small towns in West Bengal compared to the growth of total urban population in the state. Coming down to details, the class IV towns (10,000-19,999) showed a negative growth of 10.76 per cent over the past decade; class V towns (5000-9999) showed a positive growth of 57.59 per cent; class VI towns (less than 5000) showed a negative growth of 28.12 per cent. It appears that the trend has not been reversed between 1961 and 1971 and classes V and VI towns in West Bengal contained only 2.4 and 0.11 per cent of the total urban population of the state respectively.

Table—3.2: Small Towns in West Bengal, 1961

District	Area in sq km	No of small towns	sq km per small town
24-Parganas	14601.7	21	695.3
Howrah	1450.7	21	69.1
Midnapur	13606.3	12	1133.8
Burdwan	7007.4	10	700.7
Nadia	3908.5	7	558.3
Murshidabad	5367.0	6	894.5
Hooghly	3139.3	5	627.8
Cooch-Behar	3403.0	5	680.6
Jalpaiguri	6171.7	5	1234.3
Birbhum	4514.4	4	1128.6
West Dinajpur	5340.2	4	1335.1
Purulia	6234.1	4	1558.6
Bankura	6855.8	3	2285.2
Darjeeling	3254.7	1	3254.7
Malda	3605.1	1	3605.1

Thinning out of small town population does not by itself always indicate imbalance in urban development. Between 1930 and 1960 towns and lower level urban centres in Iowa³ recorded a sharp drop in their status as smaller central places. No less than 46 per cent of all hamlets died in the 20 year period. The same features were noted in Saskatchewan. But such declines were always associated with better transport linkages, more automobiles, mechanisation of agri-

culture and consequent automation and shifts in the scale and technology of retailing, the spread of influence of metropolitan region far into the countryside and progressive increase in real incomes. The small towns of West Bengal, the livelihood patterns that have developed there, offer an altogether different picture.

UBIQUITY OF STRUCTURE

The following three sample studies bring out the issues in clearer form (Table 3.3). The first sample district is Cooch-Behar. The total number of small towns in Cooch-Behar in 1961 was 5. The average population in each of these five towns was 5071.

The mean of the total number of workers ranging from cultivations to persons engaged in services, in these 5 towns came to only 36.3 per cent of the total population in the towns. Of the total number of workers, 3.98 per cent were engaged in the primary sector, 13.69 in the secondary sector and the rest, i.e. 82.33 per cent, in the tertiary sector. The domination of tertiary sector over other sectors in the livelihood pattern of small towns in a district like Cooch-Behar brings out the essential feature of urbanisation in this region. 41.32 per cent of the total urban population of the district lived in these five small towns.

The second sample district Malda has only one small town (Old Malda) with a total population of 4885 which was only 9.62 per cent of the total urban population of the district in 1961.

Only about 27.4 per cent of the population in Old Malda earned their livelihood as workers—agricultural as well as nonagricultural. Of the 1342 workers, 1.62 per cent were engaged in the primary sector, 22.20 in the secondary sector and 76.18 in the tertiary sector. It is better to remember in this connection that excluding the small town of our discussion, the district has only one more urban centre in English Bazar, i.e. only two urban centres within a total area of 6305 sq km! The overwhelming predominance of the tertiary sector is similar to Cooch-Behar. The number of persons engaged in other services is the largest, indicat-

Table 3.3. Population Studies in Cooch-Behar, Malda and Hooghly Districts, 1941

District	Cooch-Behar	5	5,071	26.2	18.8	4.8	52.2	76.8	63.8	819.9	154.6	97.8	1845.6	36.3	Population													
															Per cent of workers to total													
District	Malda	1	4,885	18	—	4	68	185	45	363	101	558	1342	27.4	Average of total workers													
															In other services (average)													
District	Hooghly	5	10,003.8	240.6	228.4	35.2	34.4	58.3	102.2	575.2	256.4	771.8	2889.8	28.8	In transport, storage, etc. (average)													
															In trade and commerce (average)													
															In manufacture other than household (average)													
															In manufacture other than household (average)													
															Average of total workers													

ing the significance of such livelihood as domestic and other similar services. It may be of interest to note in this connection that during the 18th century Old Malda was a centre of cotton and silk manufactures and the French and Dutch had factories there as well as the English. The English factory was however transferred to English Bazar in 1770 and the town began to lose its prosperity with the rise of English Bazar. It has tended to decline throughout the 19th century. It is at present a large exporting centre of rice and jute.

The third sample district Hooghly is one of the most urbanised districts of West Bengal. It has five small towns to its credit. It would be interesting to see if the livelihood pattern of these small towns differs from that of the least urbanised districts of West Bengal and to what extent.

In spite of being one of the most industrial districts of West Bengal, only about 29 per cent of the residents of the small towns of Hooghly were workers in 1961. Only about 15 per cent were engaged in household industries, manufacturing other than household industries, construction, trade and commerce, transport and communication, of which about 6 per cent were engaged in household industries and manufacturing other than household industries and another 6 per cent in trade and commerce. The basic picture here is not much different from Cooch-Behar or Malda.

EXTERNAL LINKAGES

This brings us to the question of markets, on whose character has depended the growth or decay of these small market centres of West Bengal. Of the five small towns of the Cooch-Behar district, 3 were born before 1901 and 2 in 1941. They show minimum growth. Of these Mathabhanga, Mekhliganj and Dinhata have been important centres for traffic in tobacco; Haldibari and Tufanganj for paddy and jute. Mathabhanga and Mekhliganj were river ports, now well-served with roads. The other three towns are served by railways and roads. Except Haldibari, all the others have periodic markets (hats) sitting twice a week. Haldibari has a

daily market. All these towns have in each of them, a few big merchants wholesaling in jute, tobacco, paddy, etc.

As has been noted, the only small town of the Malda district was a flourishing centre of cotton and silk manufactures in the 18th century. In the last 60 years Old Malda's population has increased by only about a thousand. The site of the large market of Balia-Nawabganj, which is held weekly, is just outside the municipal area. The town was constituted a municipality in 1869. The best of Malda's cotton and silk manufactures have always been exported with very little benefit accruing to the manufacturers or to the producers of raw cotton and silk. The *Gazetteer* (1918)⁴ mentions that Old Malda remains a considerable distributing centre of manufactured goods to the Barind. How considerable Old Malda is as a distributing centre can be gauged from the fact that for the past one hundred years the market of Balia-Nawabganj has not had sufficient demand to meet more than once a week.

Of the five small towns of the Hooghly district, there is no large trade or industry in Arambagh, though its population is 16,551. Pandua was formerly fairly populous but it was ruined by the Burdwan fever which in 1862 killed 5222 out of its 6961 people. It was noted for its paper industry. Today it has a periodic hat and a few merchants wholesaling in paddy and jute. Singur and Nabagram Colony are glorified villages and Singur has a hat sitting twice a week. Tarakeswar's importance is only as centre of pilgrimage; the settlement lives on fairs, which take place twice a year, and on pilgrims.

The picture that emerges from a study of the small towns of the three districts of West Bengal is more or less the same elsewhere too. There may be differences only in detail. As for example, the growth of the large number of small towns of the 24-Parganas district is mainly due to partition of India in 1947 and influx of refugees from East Pakistan, now Bangladesh.

We may now take up the study of the third indicator, viz the area of urban influence and services and the relationship between the small towns and their hinterlands.

The satellite nature of the small towns of West Bengal has never allowed them to grow into real economic nerve centres of regions. Murshidabad had 6 small towns in 1961 with population varying between 7841 in Beldanga and 19,780 in Kandi. Of these, two towns were born in 1901, one in 1911, one in 1921 and two in 1961. Kandi and Murshidabad, born in 1901, show marginal growth and only Dhulian, born in 1911, shows any real sign of significant growth—from 8298 to 17,220. Dhulian is an important centre of biri and jute export. In the last twenty-five years it has grown as a very significant transport centre on the southern bank of the Padma (Table 3.4)

Table 3.4 Services in Small Towns of Murshidabad, 1961

Towns	Total population	P	H	PO	E	L	D	Hos	MCW	Rhc/
Aurangabad	12783	3	1	1	Yes	1				
Dhulian	17220	6	1	2	"	1	1			
Murshidabad	16990	9	2	3	"	2		1	1	
Beldanga	7841		1	1	"	1				
Lalgola	10657	6	1	1	"	1	1			
Kandi	19780	11	2	2	"	4	1	1	1	

All these towns have electricity. Only Murshidabad and Kandi had hospitals in 1961. The libraries are mostly small with equally small readership. The primary schools could cater only to the town population. It may be mentioned here that the primary schools of the small towns of West Bengal usually do not get the full quota of students. On an average a primary school has a student strength varying between 80 and 120, whereas it has accommodation for at least 200. In fact, because primary schools outside town limits are free, parents prefer to send their wards to village primary schools instead of using neighbourhood schools.

The picture emerging from the high school situation is, however a lot different. High school strength in the small towns varies between 400 to 500. Student strength in science stream in high schools is always below capacity.

The other streams in high schools and the SF schools, i.e. the ten-year secondary schools with school final examination, are filled up by students coming from the town itself. As a result the hinterland of a school hardly goes beyond the town limit. With the existing level of literacy, the few small libraries in these small towns can hardly claim readership from the surrounding countryside. One could only plot the service areas of hospitals which extend beyond the limits of the towns themselves. But Murshidabad had only two such hospitals in six towns in 1961.

Apart from retail trade, for which there are modest markets in these towns with very limited merchandise (textiles, utensils and common household goods), the periodic markets and fairs are actually the links between these towns and their regions. Aurangabad has an annual fair in November-December, Beldanga has two fairs annually, one in May-June and the other in October-November, Murshidabad has a fair in May-June and Lalgola in June-July. Kandi has four fairs, first in April-May, second in June-July, third in June-July and fourth in October-November. (Table 3.5)

Table 3.5: Fairs in Murshidabad

Towns	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Aurangabad											1	
Beldanga					1	1				1	2	
Murshidabad					2	2						
Lalgola							3	1				
Kandi				1	3	4-5	2-3					

Thus, except the months of August and September, January to March, seven months are marked by more than one fair, the maximum of five fairs in June followed May, July and November with three each, October with two and April and December with one each. These fairs can never be called a symptom of urbanisation. These are mercantile expressions of peasant economy and Berry (1967)⁵ characterises them as follows: "Fairs complement periodic markets in peasant economies, but whereas periodic markets

are chiefly agencies for satisfying local demand, fairs meet less frequently, reflect regional differences in economic activity, and attract buyers from distant areas by virtue of their specialisation." The commodity fair representing the sole mechanism of large-scale commerce in a state of civilisation with no security of exchange and limited areas of distribution (Allix, 1922)⁶ is a feature commonly found in all small towns of West Bengal.

It may be relevant in this connection to mention that in his analysis of urban hierarchy of north Bengal, B. Bhattacharya (1972)⁷ has tried to ascertain the service capacity of individual urban centres of north Bengal by measuring the available services from a town in terms of score values based on a method worked out by Steen Folke (1968).⁸ Bhattacharya undertook to study eight central functions like administration, communication, finance, education, health, transport, recreation and Bata shops. The study has revealed that all the small towns of north Bengal belong to the two lowest orders in their service capacity. Six of these towns belong to the bottom order while eight to the next higher order. The picture afforded by north Bengal will not be different in other parts of West Bengal. Bhattacharya did not attempt to determine any functional order in these towns except on the basis of administration and administration-generated services. It would therefore be futile to search for any proper functional hierarchy based on economic activities in these towns. Bhattacharya further observes that these towns do not form any distinct pattern in their physical distribution in north Bengal. "They are not only irregularly spaced, but they also do not form the usual constellational pattern with lower order places evenly distanced away from the higher order ones." The conclusion drawn by him is that the "general apathy of the policy-making bodies impeded for a long time any sustained effort for economic development" of the region as a whole.⁹

Iowa's small cities with population ranging from 6500 to 6800 had sales worth \$ 14-16 million in 1960. Can there really be any valid transfer of models from the USA to study Indian conditions in such a situation?

The Latin-American experience has been summed up by Professors Fusebio Flores Silva and Miguel Villa Soto (1968)¹⁰ in the following manner:

"Foreign endeavours in the underdeveloped countries usually create isolated foci of modernisation within a backward area, the familiar model of the introduction of plantation economy in an area of subsistence agriculture. They develop the necessary infrastructure to serve their needs, but this is almost always oriented towards the outside world rather than to serve the needs of the underdeveloped country itself. More often than not these spots of development do not act as 'growth poles' providing stimuli for national development but accentuate the internal spatial heterogeneity."

This only underlines the necessity to look at the urban development of the country against the broad canvas of acute underdevelopment whose causes must be sought in the economic history of the country during the colonial period but whose effects are plaguing our urban centres even today.

ROOTS OF STAGNATION

That the small towns in West Bengal have been decaying or stagnating or not growing fast enough has been noted by many observers since the beginning of this century. Just about 50 years ago, W. H. Thompson¹¹, in the Census Report of Bengal for 1921, sensed this decay in the twenty-five towns of the province of Bengal and remarked that "the unpopularity of town life among the people of Bengal" was at the root of this decay.

Thirty years later, the Census Report of 1951¹² found the stagnation and decay still continuing unchecked and formulated three basic reasons for this: "(i) the rapid decay of those towns as centres of trade, manufacture and industry; (ii) the shift of these activities elsewhere to new centres; and (iii) a thoroughly new system of production—strange to the genius of production and manufacture of this subcontinent". Asoke Mitra¹³ in his *Calcutta—India's City* had to lament that even Calcutta was not growing fast enough.

Another twenty years later in 1972, the assistant registrar general of the Census Commission of India¹⁴ wrote that while the traditional big cities were marked by accelerated growth since the partition of India in 1947 "the population in the small towns of the country either became static (due to immigration) or decreased". In 1971 more than 50 per cent of the total urban population in India lived in cities with a population of one lakh and above. According to him, the low rate of urban growth in small towns in the preceding decade was possibly due to the 'green revolution' which reversed the process of rural-to-urban flow of population. "The growing demand for urban skill and enterprise in rural areas" might have slowed down the process of migration of the population to the smaller urban centres.

As we have noted earlier, features of presentday urban stagnation in the small towns of West Bengal are well known. Most of these towns exist today because they are administrative centres of some order. Administration-generated services and consequent development of other branches of tertiary activities sustain these towns. Marginal development of transport network and other items of infrastructure could not by themselves generate enough new jobs to attract rural in-migrants. These towns with population going up to 20,000 have hardly any registered factory using electricity, but only small-scale cottage industry type. Workers constitute an insignificant minority of the total population of these towns, and among them only a tiny fraction are engaged in manufacturing industries. Periodic markets and fairs which are symbols of backward peasant economy with low demands for commodities exchange characterise these towns.

Historically urban development in West Bengal, as elsewhere, was associated with the growth of market centres. These were hats, ganjs, bazars and bunders which were centres of commodity exchange. These centres had intimate connections with their hinterlands and developed with the economic growth of the countryside they served. The English, the Dutch and the French were amazed to see the wealth of some of these urban centres. Forward trading-

posts of these countries were quickly established in some of these towns. Later the English and the French established manufacturing units as in Malda and Kassimbazar. Kassimbazar, for example, began as a silk mart and became a centre of silk manufacturing. By the end of the 17th century the English had already made heavy investments in silk manufacturing. In 1881 well over 50 per cent of the East India Company's total investment in Bengal was used here. By the middle of the 19th century however, with a shift in the colonial policy, the manufacturing activities in most of these towns came to naught and only those survived as towns which had been, in the meantime, turned into administrative centres. Murshidabad district provides an extremely suitable example of such transformation. Between 1801 and 1813, it had twelve towns conducting trade and manufacturing activities. Between 1814 and 1855 four of these towns died and two were added to the list bringing the total to ten. Between 1855 and 1860 only three among these existed as towns of administrative importance, the rest having withered away as centres of trade and manufacturing. To the three were added nineteen new towns—all administrative centres. This was deurbanisation following in the wake of deindustrialisation enforced upon this part of India by the British rulers.

THE POLICY OF DEINDUSTRIALISATION

The policy of deindustrialisation was systematically pursued by the British since the fourth quarter of the 18th century. British cotton manufactures ousted Indian cotton piecegoods from Britain's home and foreign markets. By 1786 Indian cotton manufactures were doomed in face of unequal competition and restrictions. Manufacturing of silk, sugar, saltpetre, salt, shipbuilding—all met the same fate. Then there were the town duties (1809-36) which made large-scale manufactures within town limits almost impossible adding to the woe of Indian indigenous manufacturers. Here are a few examples of deindustrialisation that reversed the process of urbanisation which had begun in Bengal long before the British had consolidated their rule. Normal rural

to urban migration of people and growth of trading and manufacturing centres based on a living relationship between them and their rural hinterlands disappeared.

Kharar in Midnapur was a centre of brass and bell-metal wares. J. G. Cummings¹⁵ wrote about the highly organised brass and bell-metal industries producing cups, plates, cooking pots. The merchants obtained tin from the Straits Settlements and copper from Japan. Some had more than a hundred men in their factories. "Out of a population of 9000 in Kharar, 4000 are metal workers." In 1961, Kharar was a municipal town of the lowest order with a population of 5909 of which only 204 persons were engaged in manufacturing other than household industries.

Jangipur in Murshidabad was noted as a trading and manufacturing centre in 1801. In fact silk manufacturing had begun here by 1773. Jangipur specialised a silk manufacturing and silk trade. Thana Raghunathganj in Jangipur subdivision was famous for mulberry-growing and cocoon-rearing. Raghunathganj supplied raw materials to Jangipur. Thana Mirzapur specialised in silk weaving. The English established a commercial residency here. In 1802 Lord Valentia¹⁶ described Jangipur as "the greatest silk station of the East India Company, with 600 furnaces and giving employment to 8000 persons". After 1835, when Jangipur had lost its manufacturing, it could survive only as an administrative centre. J. E. Gastrell¹⁷ in his "Statistical and Geographical Report of Murshidabad District" in 1860 and Beverly¹⁸ in his "Report on the Census of Bengal" in 1872, had noted Jangipur as one of the important towns of Murshidabad. In 1961 Jangipur had a total population of 24,201 with just about 1000 persons engaged in manufacturing other than household industries.

Francis Buchanan's¹⁹ "Account of the District of Purnea", 1808-1809, contains a revealing picture of urbanisation that was already taking shape in Malda district. He found a hierarchy of urban centres at the base of which were markets followed upward by marts and towns. In Bholahat subdivision alone Buchanan found three groups of markets (and each group was called by him a town). Even later in

1847-48 Malda had about 61 towns according to accounts of English administrators. But ten years later there remained only two—Malda and English Bazar. The partition of India led to dismemberment of Malda no doubt, but even then the fact that Indian Malda in 1961 had only two towns—English Bazar and Old Malda, speaks for itself.

Margram on the western side of the Bhagirathi in Murshidabad was considered a town by Gastrell²⁰ in 1860. It had then a population of 10,000 and was famous as a centre of silk weaving. The number of weavers came to about 700. This was not even a town according to the census definition of 1961.

In fact the decay of Kassimbazar, Murshidabad, Jangipur and Berhampur led to the decay of many other towns which grew together with these urban centres and died with them. Among them were Kalkapur, Farasdanga, Bhagawangola, Bamangachhi, Chuakhola, Bhatpara, etc.

J. L. Sherwill's²¹ "Geographical and Statistical Report of Dinajpur District, 1863", as well as writings of F. Buchanan²² and H. Beverly²³ indicate that the district of Dinajpur in 1808 had 26 trading and manufacturing centres. These were reduced to 6 in 1861 to which were added 20 administrative centres. Though the total number of towns remained the same, there had taken place a qualitative change in the course of the intervening 53 years. This qualitative change was summarised in the 1951 Census Report²⁴ as follows: "The court of directors of the East India Company having forbidden the export of an increasing list of commodities out of Bengal ports to England and elsewhere, and having driven other nations and countries out of the field of Bengal's trade and commerce by their sovereign rights and supremacy on the high seas, indigenous manufactures for which Bengal had so long enjoyed a far famed reputation, suddenly slumped and then rapidly disintegrated." Romesh Dutt²⁵ summed up the development in the following manner: Production of independent Indian manufactures had been discouraged, sometimes by positive prohibition, later on by the influence of the company's residents. The weaving of fabrics had been largely discontinued.

Men who had worked on their own capital, produced commodities in their own houses and villages, and obtained their own profits, were now dependent on the company's residents, who supplied them with raw cotton and raw silk, and received prices which the residents settled. They had lost their industrial and economic independence with their political independence. With the termination of the company's monopoly, even this system of manufactures collapsed.

The net effect of this disintegration of traditional seats of commerce and manufacturing was a drastic change in the occupational pattern in these towns and a shift of population from urban areas to the rural hinterlands in search of employment in land. And, what is more, the disintegration of the major centres set in a kind of chain-reaction all along the line of hierarchical order of urban centres and left a trail of economic devastation. It has already been mentioned how the ruin of Kassimbazar, Murshidabad, Jangipur and Berhampur led to the ruin of scores of other secondary centres and areas which had close economic ties with them.

Finally what followed was a total disruption of the urban-rural continuum that was normally growing in the landscape of Bengal. The newly-created administrative centres which took the place of traditional trading and manufacturing centres were grafted on to the rural scene but could never get integrated with it due to the role they were destined to play under colonial rule.

METROPOLIS-SATELLITE RELATIONSHIP

The spatial structure that gradually emerged in Bengal was a hierarchy in subservience with the metropolitan economy of Britain at the apex. Calcutta as its colonial outpost and a large number of market-cum-transport-administrative urban foci functioning as satellites to Calcutta. B. Chatto-padhyay and M. Raza²⁶ have pointedly characterised these centres in the following manner: "Their 'urban' character is circumscribed by a preponderance of heterogeneous activities of a tertiary nature, which may be combined with some rudimentary processing or ancillary industry. Their function,

primarily, is to serve as apex assembly points of primary produce auctioned through the satellite centres, to subserve which a paraphernalia of infrastructural facilities are built up. The preponderance of tertiary activities imparts to them the character of being intensely commercially motivated centres of consumption rather than production."

With the closing down of manufacturing units many of the trading and manufacturing centres lost their identity as urban growth nodes. A process of deurbanisation set in. This process of deurbanisation should be viewed together with 'urbanisation' through the growth of administrative centres that began almost simultaneously. Some social scientists like Kingsley Davis²⁷ would not differentiate between the two when talking of urbanisation in India or comparing Indian situation with those existing in European countries at the close of the 19th century. Some others would like to call it urban accretions rather than urbanisation. Brian J. L. Berry²⁸ characterises them as features of urban growth and not development. Whatever may be the terminology, it is clear that production as a primary function of such urban centres ceased to be such by the middle of the 19th century, a feature which has not been basically altered even after one hundred years.

The process of deurbanisation was observed by Sir Henry Cotton²⁹ who in 1890 wrote that families which were formerly in a state of affluence have been driven to desert the towns and betake themselves to the villages for a livelihood. R. P. Dutt³⁰ wrote: "It was not only the old manufacturing towns and centres that were laid waste, and their population driven to crowd and overcrowd the villages; it was above all the basis of the old village economy, the union of agriculture and domestic industry, that received its mortal blow. The millions of ruined artisans and craftsmen, spinners, weavers, potters, tanners, smelters, smiths, alike from the towns and from the villages, had no alternative save to crowd into agriculture. In this way India was forcibly transformed, from being a country of combined agriculture and manufactures, into an agricultural colony of British manufacturing capitalism." This is

largely why between 1891 and 1921 the proportion of population dependent on agriculture in the whole of India rose by 12 per cent.

Thus the colonial rule shattered the old balance in industry and agriculture, of urban growth points and rural hinterlands, though unlike the old hand industry which was disrupted but not compensated with modern industry, the ruination of old urban centres was 'compensated' by the creation of administrative-cum-service satellites, the forerunners of today's modern urban nodes of West Bengal.

URBAN-RURAL CONTINUUM

We have noted earlier that the urban-rural continuum which was normally taking shape over the landscape of Bengal was disrupted by deindustrialisation followed by deurbanisation during the entire course of the 19th century. The term continuum refers to a normal rural-urban relationship, to 'continuous gradation' or 'consistent variation' from one to the other where the independent variable is the community size while dependent variables are occupational and population characteristics. The harmonic development of urban-rural spatial relationship that is inferred in a continuum has been the forerunner of all theories concerning the spatial structure of urbanisation of the west. But such a relationship has never had the opportunity to grow in India since about the beginning of the 18th century. Richard A. Ellefsen³¹ in his analysis of "city-hinterland relationship in India" based on five big cities comes to the conclusion that "the urban fringe of these cities is usually restricted to small and sporadic residential and commercial developments at the city's edge, ruling out the possibility of a rural-urban fringe". The immediate hinterland is very small while the outer hinterland has only 'nebulous' connections with the city. Ellefsen thus notes steep falling off of characteristics associated with an urban way of life "that leads to the often-made statement that urbanism stops at the city's edge". The situation does not appear to be very different in case of the smaller administra-

tive-cum-service centres of West Bengal, where a wall of discontinuity, a kind of alienation, draws the line of demarcation. It was not for nothing that the registrar general³² of the Census Commission of India had to lament in 1951 that Calcutta was an island floating in a sea of rural backwardness notwithstanding the existence of a large number of towns of many orders scattered over the state.

Gunder Frank³³ noted that the absence of metropolis-satellite relationship in Japan opened its doors during the 19th century to rapid growth of industrialisation and urbanisation. It may therefore be relevant here to trace in very broad outlines the urban growth pattern of Japan in the second half of the 19th century to draw a contrasting picture to what happened in our own country.

In Japan towns grew as market centres with small industries making textiles, sake, pottery and metal goods during the Tokugawa era, but the main development came rapidly with industrialisation after 1868. Sen Katayama³⁴ in his *Modern Japan* wrote: "Japanese capitalism had to create everything anew, beginning from shares and machinery and ending with technical skills and knowhow. However, this creative work was not done in blind imitation of European models. The industry transplanted from the West had to be adjusted to local conditions and peculiarities, so as to avoid failures and achieve the greatest possible effect." So after the period of nondevelopment during the Tokugawa period, with Meiji restoration began a period of concentrated efforts at modernisation with self-reliance in Japan. Between 1868 and 1878 Japan laid the foundation of modernisation—built railways, telegraphs, shipyards and ships, mines and mining schools, textile mills, coke ovens and blast furnaces, metallurgical and engineering plants, chemical plants, paper mills and so on and so forth. Most of these were either modelled on the European or equipped with European machineries.

In concurrence with rapid industrialisation spread urbanisation. By 1890 there were 234 towns in Japan of which 153 had a population of 10,000 to 20,000, sixty between 20,000 and 50,000, thirteen between 50,000 and one

lakh and eight cities having an even larger population. The hierarchical pyramid was almost ideal. By the end of the decade, up to 20 per cent of the entire population of Japan was living in towns. K. Popov³⁵ writes:

"As capitalism advanced, Japan's large towns became hubs of economic life, as well as political and cultural centres. They were also arenas of bitter class struggle.

"A number of new towns arose in places where minerals were mined and mines sunk, other industries were springing up, and power stations were being built.

"The newly-built railways required stations: some of these, located at highway intersections, grew into large communities."

Between 1870 and 1900 towns and factory communities had already become economic centres and it was here that the urban proletariat and professionals were born. Since then all of Japan's increasing population has been absorbed by migration to the towns, leaving the number employed in farming at 9.7 million in 1967, 4 million less than in 1868.

Germany is one of those countries in Western Europe which had a late start in modernisation. The second half of the 19th century was also the point of its take-off on the road to modern industrial urbanisation.

By the middle of the 19th century, Germany was already well in the midst of the third phase of urban expansion which had followed the first two phases of urbanisation in the medieval and renaissance periods. By 1200 there were over 200 towns in West-German lands based on mercantile communities, local handicrafts, markets and strongholds. At the end of the middle ages the total number of towns in these West-German lands had gone up to 2000 plus a very large number of market settlements. Land routes and waterways played a very significant role in locating these towns. Foundation of most of these towns was economic in the sense of trade with the surrounding market areas, and for some, political, in the sense of defence and administration. Manufacturing was almost exclusively concentrated in the towns controlled by guilds. The poli-

tical framework however did not develop until the 15th century during and immediately after the feudal anarchy. In the eastern lands of German colonisation some 1500 towns were created between the 13th and the 15th centuries. At the beginning of the renaissance there were no less than 3000 towns in Germany and 12 to 15 of them had over 10,000 inhabitants. R. E. Dickinson³⁶ has described how from this base it was easy for Germany to embark on the modern urbanisation with the commencement of the machine age. "The machine age commenced in the middle of the 19th century but it was not till after 1870 that industrialisation and the concentration of workers' homes near mines and factories really began. With the advent of the electrical tramway in 1881 and the development of rapid local transport after 1900, concentration in city centres gave way more and more to decentralisation. New settlements have grown on the outskirts of the cities both as industrial settlements, grouped around large new factories, and as residential centres, serving as homes for workers in the city centres."

INVALID COMPARISONS

Bert F. Hoselitz³⁷ in his "The Role of Urbanisation in Economic Development: Some International Comparisons" found comparative pattern of urbanisation in the 19th-century Europe and presentday India only in terms of overall demographic levels. In socioeconomic terms however Hoselitz had to admit that the picture was quite variant. Even a country like Ireland had three times the percentage of working force engaged in manufacturing in 1851 compared to that of India in 1951. What becomes clear is that European urbanisation or, for that matter, urbanisation in Japan was very much more solidly geared to industrial growth than in India today. Hoselitz however did not venture into analysing the basic causes of this gross disparity between the demographic and other socioeconomic features of urbanisation in India which we have tried to comprehend in the preceding pages. In fact there

is a tendency among many urban sociologists in India and abroad to view the process of urbanisation in our country in isolation from the effects of colonial subjugation for over two centuries. They tend to ignore the fact that at a time when Japan and many European countries including Germany taking full advantage of modern technology launched a full-scale development of modern urbanisation in conjunction with rapid industrial growth, India, and Bengal in particular, began to underdevelop in a colonial framework and had to helplessly stand by and witness the setting in of a process of deindustrialisation, deurbanisation and an immense crisis in agriculture as a consequence of the sharp rise of population pressure on land. The failure to participate in the technological revolution of the 19th century has created for India and West Bengal not only just a lag of a century, but is responsible for all the distortion in urban development witnessed in the towns of West Bengal today.

The vital links in the colonial framework we have talked about were the termination of the East India Company's monopoly in 1813, the revision of the company's charter in 1833, and finally the transfer of power from the company to the crown after 1857.

The opening of trade in 1813 qualitatively changed the character of Indian commerce—from a chiefly exporting country India was turned into an importing one. Karl Marx³⁸ wrote that India, the great workshop of cotton manufacture for the world since immemorial times, became now inundated with English twists and cotton stuffs. The indigenous manufactures withered away together with manufacturing centres, including those created by the East India Company itself. "British steam and science uprooted, over the whole surface of Hindustan, the union between agriculture and manufacturing industry", wrote Marx,³⁹ though this was the time when the real beginning was made in jute, tea and coal industries as well as in the Indian railways by the British. The replacement of the company by the crown after 1857 did not alter the situation. The drain continued unabated.

The permanent settlement of 1793 had already set in

motion a chain-reaction to the total ruin of Bengal's agriculture. In the first half of the 19th century there were seven famines in India leading to the death of one and a half million people. In the second half of the 19th century there were thirty famines—six between 1851 and 1875 and twenty-four between 1876 and 1900—in which twenty million persons perished. Bengal had its share of these calamities. The Indian Famine Commission of 1880 in its report noted that together with the proverbial backwardness of agriculture and the overwhelming dependence of mass of people on it, there was no "diversity of occupation, through which the surplus population may be drawn from agricultural pursuits and led to find the means of subsistence in manufactures or some other employment". By the end of the 19th century, Bengal's agriculture was in shambles.

In the sphere of manufacturing industries, the highly-selective development of jute and tea industries, of mining and rudiments of the engineering industry tended to create a few islands of highly-organised plantation, mining and agro-based enterprises in a vast sea of primitive, smallscale and overpopulated agriculture which had no capacity to have any effect of spillover on the rest of the economy. Thus the real basis of industrial urbanisation never had the chance to grow in West Bengal. Japanese urbanisation in the second half of the 19th century, on the other hand, grew together with the phenomenal growth in agricultural production. In the thirty years between 1890 and 1920 Japan increased its agricultural output by 77 per cent, area under cultivation by 21 per cent, yields per acre by 40 per cent. During the same period population increased only by 44 per cent while the agricultural labour force fell by 14 per cent. These are significant figures which illustrate how the benefits of rapid rise in agricultural productivity in Japan could be siphoned off in order to finance industrial production, a feature totally absent in Bengal since the company days.

This then is the missing link in the understanding of the root causes of stagnation and decay in the small towns of our state. 'Overurbanisation' of the primate city of Calcutta,

the growth of the Calcutta metropolitan area or the enclave growth of new townships around new industrial complexes have not been able to change the basic pattern of urban development in the small towns of West Bengal.

REFERENCES AND NOTES

- 1 CENSUS OF INDIA (1961), Vol 16, *West Bengal and Sikkim*, part IIa, p. 210.
- 2 BERRY, BRIAN J. L., *Geography of Market Centres and Retail Distribution*, Prentice Hall, N. J., 1967, pp. 13-21.
- 3 Ibid, p. 116.
- 4 *Gazetteer of District of Malda*, 1918.
- 5 BERRY, BRIAN J. L., op cit, pp. 93-95.
- 6 ALLIX, A., Geography of fairs, *Geographical Review*, Vol 12, 1922.
- 7 BHATTACHARYYA, B., Factors determining the central functions and urban hierarchy in north Bengal, *Geographical Review of India*, Vol 34, No 4, 1972
- 8 FORKE, STEEN, Central place system and spatial interactions in Nilgiris and Coorg, *Collected Papers*, Denmark, 21st International Geographical Congress, 1968, pp. 16-54.
- 9 BHATTACHARYYA, B., op cit.
- 10 SILVA, E. F and SOTO, M. V., Geographical conditions of underdevelopment, a Latin American viewpoint, *Developing Countries of the World*, National Committee for Geography, India, 1968, pp. 72-88.
E. F. Silva was the chairman of the department of geography, and M. V. Soto was assistant professor of geography, University of Chile. In the paper mentioned above, the authors inquire into the historical roots of underdevelopment in Latin America where, according to them, "the persistence of a very old institutionalised pattern of social relations has constituted an effective obstacle for modernisation. A clear example is the latifundia system whose origin can be traced back to early colonial times... The latifundia evolved into a close autarchical type of economy based on manpower for its exploitation. The availability of abundant and cheap labour force which permitted high profits with extensive utilisation of land at a low productivity level did not stimulate mechanisation of agricultural sector." They discussed the various geographical expressions of this underdevelopment accentuated by "lack of initiative with the ruling elites" and "continued dependence on foreign powers, whose main interest has been their own benefit rather than development of local economies".

11. THOMPSON, W. H., Quoted in Census of India (1951), Vol 6, part 1a, report, *West Bengal, Sikkim & Chandernagore*, p. 413.
12. CENSUS OF INDIA (1951), Vol 6, part 1a, report, *West Bengal, Sikkim & Chandernagore*, p. 414.
13. MITRA, ASOKE, *Calcutta—India's City*, New Age Publishers Private Limited, Calcutta, 1963.
14. ASSISTANT REGISTRAR-GENERAL of the Census Commission of India, *Anrita Bazar Patrika*, Calcutta, 1972.
15. CUNNING, J. B., Review of industrial position and prospects in Bengal in 1908, *Gazetteer of Midnapore*, 1911, pp. 126-27.
16. *Gazetteer of Murshidabad*, 1911, p. 198.
17. GASTRELL, LT-COL J. E., Statistical and geographical report of Moorshidabad district, Calcutta, 1860
18. BEVERLY, H., India, Census—1872, Report of Bengal.
19. BUCHANAN, HAMILTON (FRANCIS), An account of the district of Purnea, 1809-1810, Patna, 1828.
20. SHERWILL, J. L., Geographical and statistical report of Dinajepore district, Calcutta, 1865.
21. BUCHANAN, HAMILTON (FRANCIS), An account of the district or zila of Dinajpur, 1808-1810, Calcutta, 1833.
22. BEVERLY, H., op cit
23. CENSUS OF INDIA (1951), op cit, p. 415.
24. DUTT, ROMESH, *Economic History of India*, Vol I, Publications Division, Government of India, 1963, p. 190.
25. CHATTOPADHYAY, B. & RAZA, M., Regional development, analytical framework and indicators, Working Paper in Symposium on Regional Disparities in India, New Delhi, 1973.
26. DAVIS, KINGSLEY, Urbanisation in India: past and future, *India's Urban Future*, Roy Turner (ed.), University of California Press, 1962, pp. 7-9.
27. BERRY BRIAN J. L., op cit, pp. 95-99.
28. COTTON, SIR HENRY quoted by R. P. Dutt in *India Today*, Victor Gollancz, 1940, p. 127.
29. DUTT, R. P., *India Today*, Victor Gollancz, 1940, p. 129.
30. ELLEFSEN, RICHARD A., City-hinterland relationships in India, *India's Urban Future*, University of California Press, 1962, p. 114.
31. MITRA, ASOKE, op. cit.
32. FRANK, GUNDER A., *Capitalism and Development in Latin America*, Pelican Latin American Library, 1969, pp. 120-21.
33. KATAYAMA, SEN, referred to by K. Popov in *Japan*, p. 241.
34. POPOV, K., *Japan*, Nauka Publishing House, Moscow, 1969, p. 250.
35. DEMPSTER, PRUE, *Japan Advances*, p. 258.

- 36 DICKINSON, R. E., *Germany*, Mathuen & Co. Ltd., New York, 1964, pp. 171-72
- 37 HOSELITZ, B. F., The role of urbanisation in economic development: some international comparisons, *India's Urban Future*, University of California Press, 1962, pp. 164-71.
- 38 MARX, K. & ENGELS, F., *The First Indian War of Independence, 1857-1859*, Foreign Languages Publishing House, Moscow, p. 29.
- 39 Ibid, p 18.

CALCUTTA METROPOLITAN EXPLOSION AND UNDERDEVELOPMENT

The metropolitan explosion of Calcutta has become a constant headache for all planners, sociologists and political parties. In all the discussions about the ills of this city and the remedial measures proposed or executed there is still hardly any clear understanding of the roots and extent of the crisis that has gripped this city in agony. Here an attempt is made to understand the origin, nature and magnitude of this metropolitan explosion.

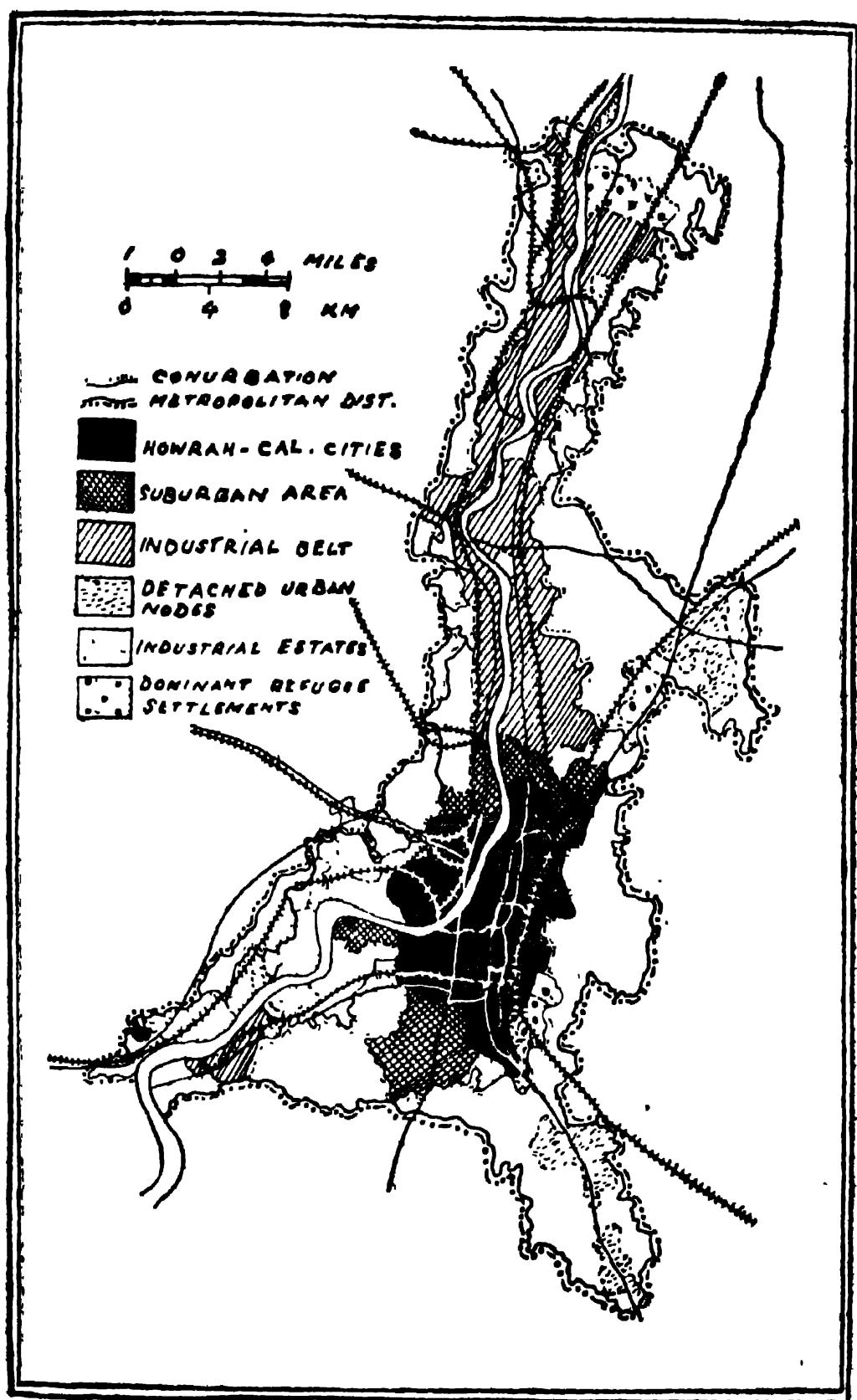
A CONFUSION IN DEFINITION

There is confusion about the name, size and population of Calcutta. The Calcutta municipal area, after amalgamation with Tollygunge municipality, is only 36.92 sq m administered by the Calcutta Municipal Corporation. But Calcutta municipal area does not contain the continuous urban tract that has grown on both banks of the Hooghly river, a tract variously called the Greater Calcutta (GC), Calcutta Industrial Region (CIR), the Calcutta Conurbation (CC) or the Calcutta Metropolitan District (CMD).

The term Greater Calcutta was first conceived during the second world war when for the purpose of statutory rationing an area covering almost all the municipalities spread along 40 m on both banks of the Hooghly from Budge-Budge to Halisahar was denoted. The total area of GC was estimated to be about 270 sq m.

Calcutta Industrial Region was officially accepted as an entity by the census authorities in 1951. It included 36 towns over an area of 164.03 sq m. GC and the CIR were therefore not exactly conterminous.

In the sixties, the Calcutta Metropolitan Planning Organisation attempted to identify the continuous built-up area



Calcutta Metropolitan District

around Calcutta, the conurbation, an area with 'brick and mortar unity' grown up on both banks of the Hooghly linked up by three bridges, at Calcutta, Bally and Naihati. The Calcutta Conurbation was found to extend over 214.84 sq m containing tracts designated both as urban and nonurban.

Then came the formal recognition of an area called the Calcutta Metropolitan District, created for the purpose of planning and the creation of the statutory body called the Calcutta Metropolitan Development Authority (CMDA). The CMD has an area of about 532.87 sq m which includes 3 municipal corporations, 31 municipalities, 62 nonmunicipal urban areas, 1 cantonment and 507 rural mouzas.

The concept of 'urban agglomeration' (UA) of the census authorities for the 1971 census operations is yet another definition of Calcutta. UA is an urban cluster where the urban area is not really limited only to the notified boundary of any one or two places but embraces satellite towns and cities and industrial towns and settlements close to this urban area, being outgrowths of such towns or cities.¹ Such well-formed clusters have been treated as urban agglomerations, the determinant being a continuous urban spread including outgrowths. Calcutta Urban Agglomeration (CUA) may therefore be nearer to the size of the CIR. Its extension is 221.21 sq m and has a population of 7.01 million and includes 3 corporations, 26 municipalities and 45 nonmunicipal urban areas.

From the maze of these nomenclatures will be evident that Calcutta is not just what its municipal administrative boundary indicates. Unlike other metropolises in India, its beginning was polynuclear, now merged into one gigantic sprawl teeming with 7.01 million people, an enigma called an urban explosion beyond all controls.

THE HISTORICAL PERSPECTIVE

A few years before the end of the 17th century the East India Company had established a factory in Hooghly, 25 miles up the river from Calcutta. But the English merchants came into conflict with the Mughal fouzdar and had to

abandon Hooghly. On 24 August 1690 the English merchants, led by Job Charnock, halted for the night at Sutanuti village and then decided to stay on.

Eight years later the company took on lease from the nawab, at a rental of Rs 1300 a year, the three villages of Sutanuti, Kalikotta and Gobindapur on the east bank of the Hooghly river. The company also obtained permission to build a fort. Within 20 years the activities of the company extended so much that they had to take a further lease of 38 villages contiguous to the original three. These 41 villages constitute what is more or less the Calcutta municipal area today.

During the second half of the 18th century Calcutta grew fast in importance, size and population. A new fort was built in 1773. The mayor's court had been meanwhile established in 1727 by a royal charter. In 1774 an act of the British parliament introduced a fullfledged government—a governor-general for India with his headquarters at Calcutta, a council of 4 members, a supreme court and so on. For 137 years Calcutta continued to be the capital of British India. In 1911 that role ended with the shifting of the capital to Delhi.

What lay behind the selection of Calcutta as the headquarters of British trade and rule in India? British authors have candidly answered the question themselves. The importance of Calcutta lay in its position as the capital of the empire and as a seaport situated on a navigable river and connected by rivers, navigable canals and roads with the rich valleys of the Ganga and Brahmaputra, whose products it exported overseas, while it supplied their dense population with the products and manufactures of England. Calcutta was protected against surprise enemy attacks by the river on the west and by the impassable salt lakes on the east, and it could be defended by the guns of the shipping.²

The luxurious courts of the Mughal rulers had fostered the manufacture of beautiful silk and muslin of Murshidabad and Dacca, which were eagerly bought up in Europe. Saltpetre of Bihar was in great demand in England for the manufacture of gunpowder during the French wars; rice,

sesamum oil, cotton cloth, sugar, clarified butter, lac, pepper, ginger and tussore-silk were much sought after. But this was only the beginning.

The demand for Indian muslin gradually died away in Europe, while early in the 19th century Lancashire began to export manufactured cotton piecegoods to India. While the export of silk and cotton manufactures from India had practically ceased, the export of jute had grown enormously since the middle of the 19th century and the production of oil-seeds and tea had vastly increased. With the development of railways and steamer routes along the main waterways, Calcutta became the focus of the trade of Assam, Bengal and the prosperous Ganga valley.

By 1864 the East India Railway was opened for traffic from Calcutta to Delhi. It ran parallel to the Grand Trunk Road and the Ganga and the three together constituted the most significant highway of commerce. The extension of the railway system to northeastern India added year by year to the sphere of influence of Calcutta as a great collection and distribution centre. Steamer service on the river highways between Calcutta, Assam and Bihar met the requirements of tea estates. It was estimated that the length of navigable channels was about 1127 m of which only 47 m were artificial canals. By the end of the 19th century the average volume of traffic through these channels was to the tune of 1 million tons per annum, valued at £ 4 million.

Calcutta's importance rose with the rise of the jute industry. The export of jute in its manufactured form began on a noticeable scale about the time of the Crimean war and gradually increased until it became the most important item of Calcutta's trade with the establishment of power-driven manufacturing units. It is said that Bombay was built upon cotton. But there is possibly more truth in the saying that Calcutta is built upon jute.

By the end of the 19th century Calcutta had grown into the second biggest city of the British empire, the most important colonial trading post. Its imports, coming mostly from the United Kingdom, included cotton piecegoods, metals, oils, sugar, machineries, woollen goods, hardware,

cutlery, salt, liquors, apparel, drugs and railway material. It exported items collected from the whole of northern, north-eastern and eastern India. Thus from distant corners of Bengal were collected raw and manufactured jute, rice, coal, linseed, opium, tea, grains, pulses, hides and skins, silk and indigo. From Bihar and Uttar Pradesh came opium, oilseeds, grains, pulses, hides and skins, wrought brass, sugar, opium, lac, coal, saltpetre, etc. Assam supplied tea, oilseeds, grains, pulses, lime, timber, etc. And with its trade Calcutta grew as a city of merchants, moneylenders and of persons attached to the administrative and trading machine of the British. As Asok Sen³ puts it, Calcutta became "the city of the nouveau riche, i.e. of imperial administration and commerce, of absentee landlords, moneylenders and real-estate speculators".

Before 1872 Calcutta's population was anybody's guess. In 1752 an estimate put it at just over 4 lakh while in 1866 the officially-accepted estimate brought it down to 3.5 lakh. In the first complete census of 1876 Calcutta had a population just over 6 lakh. Since then the growth has been by leaps and bounds.

CALCUTTA IN THE REGION

In 1971⁴ Calcutta was found to be the largest urban agglomeration in India, followed by the Greater Bombay Municipal Corporation and Delhi, Madras, Hyderabad and Ahmedabad urban agglomerations. CUA had a population of a little over 70 lakh, Greater Bombay MC 60 lakh, Delhi UA 36 lakh, Madras UA 32 lakh, Hyderabad UA 18 lakh and Ahmedabad UA 17 lakh. Of these we shall discuss the comparative features of CUA, Greater Bombay MC and the Madras UA, the three port-based industrial metropolises which grew as a result of international division of labour forced on India as a colony by Great Britain as the metropolitan country. Today these three have around them fairly mature⁵ economic regions which are yet to be very clearly demarcated statistically, but for the sake of convenience can be distinguished as in Table 4:1.

Table 4.1

Region	Metropolitan Area	Territorial Extension
Northeast	Calcutta UA	West Bengal, Bihar and Orissa
West	Greater Bombay MC	Maharashtra and Gujarat
South	Madras UA	Tamilnadu, Andhra, Karnataka and Kerala

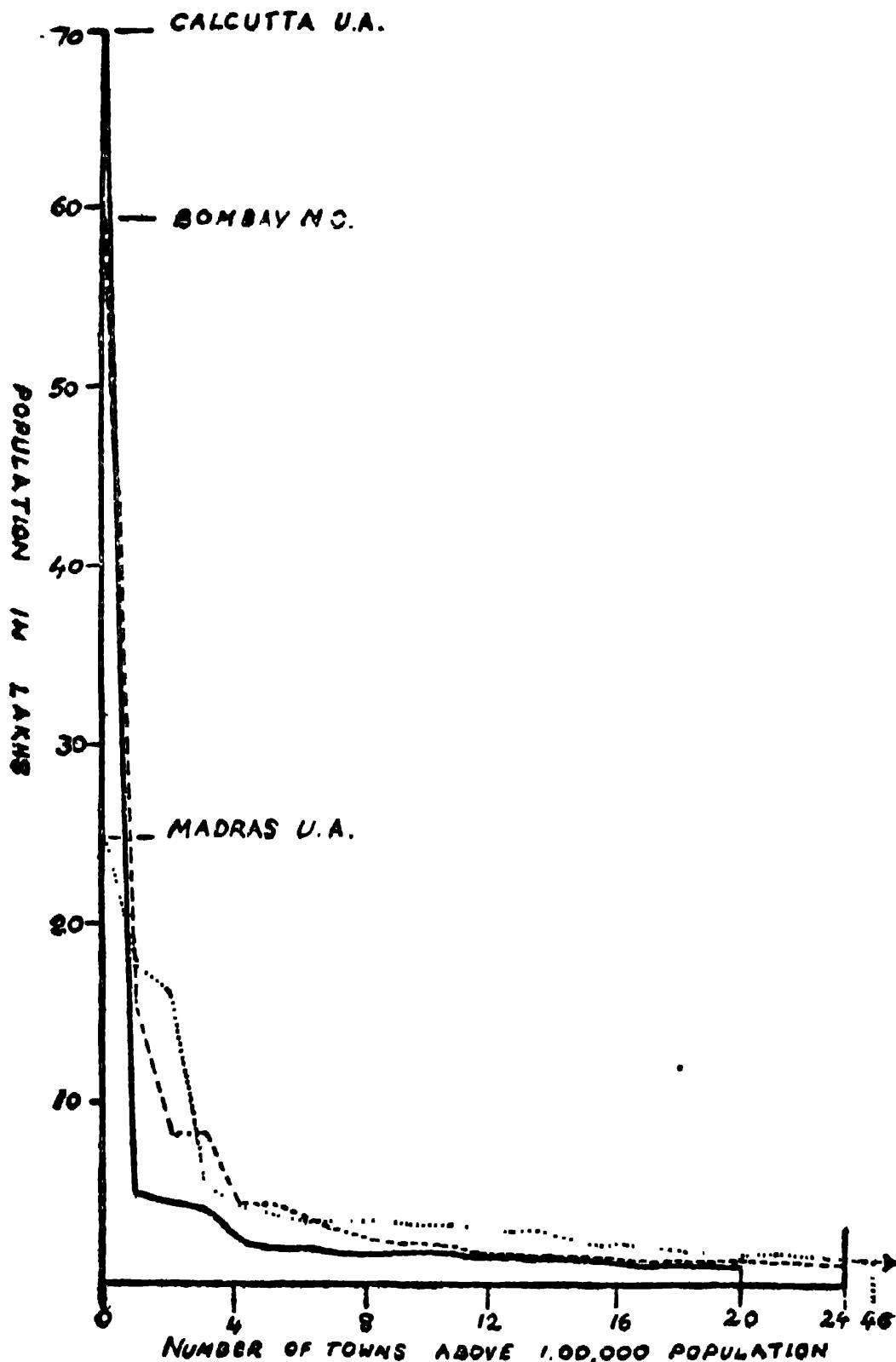
These three economic regions as units of investigation have between them adequate comparability, both in the history of their growth and characteristics of urbanisation.

In table 4.2 we may note some of the basic urban characteristics of the three regions in 1971:

Table 4.2

Region	Area as % of India	Total population (in million)	Total urban population (in million)	Urban population as % of total population	Population in metropolitan area (in million)	Metropolitan population as % of total urban population of region
NE	13.7	122.60	18.44	14.30	7.00	37.96
West	16.2	77.11	23.21	27.66	5.96	21.32
South	20.9	134.35	31.46	22.55	2.47	7.85

Two observations may be made from these figures. Firstly, it is evident that all the regions are very poorly urbanised in spite of their own differences. Compare these figures with some of the metropolises of developed countries and we will get the correct picture. For example just over a decade ago nearly 70 per cent of the population in USA, nearly 60 per cent in France, 81 per cent in Great Britain, 63 per cent in Japan and 48 per cent in the Soviet Union lived in towns and cities.⁶



Class I towns and their population in the northeast, west and the south economic regions. The continuous line represents the northeast, broken line represents the west and the dotted line represents the south

CM-6

On the contrary in the region around Bombay, which has the highest percentage of urban population, the figure barely reached the one-fourth mark in 1971. The situation in the northeast was the worst, only 14.30 per cent! If this was the picture in the three most developed economic regions of India, one can easily imagine the situation in other areas.

Secondly, of the three central places, Calcutta UA has a very high share of the total urban population of its region (NE) which is more than four and a half times that of the Madras UA in the south and nearly double that of Greater Bombay MC in the west. The disparity in urban development thus is the worst in the northeast which has nearly 38 per cent of all urban population concentrated in Calcutta UA.

To go deeper into the question of urban characteristics of the three regions, let us look at the distribution and density of towns of different classes in these regions. At the outset let us examine the case of class 1 towns.

Table 4.3 Class 1 towns

Region	No of class 1 towns	Population in class 1 towns (in million)	% of urban population in class 1 towns
Northeast	20	10.84	49.4
West	24	13.55	54.8
South	46	14.49	45.9

It appears from table 4.3 that the south has the largest number of class 1 towns (46) but their share of total urban population is the lowest among the three regions (45.9) indicating a fair distribution of urban population in the lower order urban centres. In the northeast the concentration is 50 per cent while in the west it is 55 per cent in nearly half the number of class 1 towns as compared to the south. The massive concentration of urban population in class 1 towns in the northeast and west is obvious.

In the absolute number of towns of lower order (classes 1 to 6) the south similarly offers a picture substantially different from the northeast and west. The south has the largest number of these towns—more than double those in the west and nearly 3 times those in the northeast. The ratio of the number of class 1 towns to those of the lower order towns in the northeast in round figures is 1:18, whereas for the south and west it is 1:21. Further breakdown of the figures would give us the following picture: for each class 1 towns in the northeast there are 1.5 class 2 towns, 4.7 class 3 towns, 6.1 class 4 towns, 4.9 class 5 towns and 0.6 class 6 towns. For the west the corresponding figures are: 1.3, 4.5, 7.0, 5.7, 0.9, and for the south: 1.3, 4.7, 4.6, 3.9 and 2.9. Even within the broad spectrum of imbalance in all the three regions, the position in the northeast is far worse than the other two. The dichotomy of the existence of the biggest metropolis surrounded by the smallest number of lower order towns is plaguing the urban life in northeast India.

The actual figures concerning growth and decay of towns in the three regions during the past decade show that the northeast had the smallest number of fast-growing towns, only 49, compared to 59 in the west and 94 in the south. In the number of decaying towns however the south had the largest figure (28) whereas the northeast had 19 and the west had only 11. This statement by itself may not give us an adequate understanding of the problem. Therefore let us compare these figures with the growth-rates of urban population in the three regions, which was 45.3 per cent in the northeast, 40.9 per cent in the west and 35.7 per cent in the south. Thus though the northeast had the smallest number of fast-growing towns, its urban growth-rate was the highest between 1961-71. On the other hand the south had the largest number of fast-growing towns though her urban growth-rate was the lowest. If anything, this certainly indicates that the overall growth of urban population in the south was absorbed in the large number of towns, while in the northeast this was limited to a very much smaller number of towns. Table 4.47 reveals the share

of various classes of towns in the three regions of the total growth of urban population :

Table 44. Growth in urban population

Region	Net of urban population between 1961-71 (in million)	Net increase of urban population in town classes between 1961-71 (in million)					
		i	ii	iii	iv	v	vi
Northeast	4.83	4.17	0.14	0.43	0.30	0.08	0.01
West	6.73	3.99	1.52	0.66	0.51	0.06	—
South	8.34	4.93	4.93	1.72	0.70	0.23	—

These figures conclusively prove that the urban population growth between 1961 and 1971 was primarily contained within class 1 towns in the northeast and, as we shall see later, in spite of the sluggish rate of growth of the Calcutta metropolitan area, it had the lion's share of class 1 towns. In the south and west, the lower order towns had a much better share of the additional urban population of the decade.

THE PRIMACY OF CALCUTTA

We have already seen that Calcutta UA is the most populous among all the urban agglomerations in India.

Calcutta had a very slow growth-rate of only 22.11 per cent during 1961-71 which was nearly half the growth-rate of Bombay (43.75 per cent) and of Madras (42.86 per cent). Nevertheless Calcutta UA contained 64 per cent of the total population in class 1 towns as against 40 per cent for Bombay and 17 per cent for Madras.

Thus Calcutta's bigness is out of all proportions to the urban development of her region—her primacy is fantastic and abnormal.⁸ In comparison Bombay and Madras provide healthier complexion. Calcutta is like a cancer eating into the vitals of the economy of the northeast region.

We have noted earlier that urban population in the developed countries like the USA, France, Great Britain, Japan,

and the USSR far exceeds the nonurban population. There cannot be any valid comparison between urbanisation in these countries and the three Indian regions under discussion. For the whole of India the urban population in 1971 was 108.79 million or only 19.87 per cent of the total population. For the three Indian regions the figures were as follows: Northeast—14.30, west—29.66 and south—22.55. In an overall situation of acutely low urbanisation, the west and south stood far ahead of the northeast.

In 1960 New York had a population of 1 crore 47 lakh, Tokyo-Yokohama 1 crore 36 lakh, London 1 crore 15 lakh, Rhine-Ruhr 1 crore 4 lakh, Moscow 79 lakh and Paris 78 lakh. With only about 14 per cent of the total population living in urban areas in the northeast Calcutta metropolitan area in 1971 had reached the size of Paris or Moscow in 1960. Can there be anything more absurd than this?

The extent of disproportionate growth of Calcutta as against other towns of the northeast can be well understood if we note the following few facts: a decade ago New York was twice the size of Chicago, the second city of the USA, Rome and Milan in Italy were almost equal. Tokyo-Yokohama was double the size of Osaka-Kobe. Paris was seven times larger than Lille-Roubaix-Tourcoing complex. London was only about four times larger than Glasgow, the second city of Great Britain. In India Greater Bombay MC was 3.77 times the size of Ahmedabad, and Madras UA was 1.39 times the size of Hyderabad. In 1971 Calcutta, in comparison, was 14.29 times larger than Patna, the second biggest city of the northeast region. If we take only west Bengal, we have an even more fantastic figure. Calcutta was 32.32 times larger than the Durgapur complex or 13.3 times larger than Durgapur, Kharagpur and Asansol put together. Calcutta has thus attained a degree of primacy almost unparalleled in the whole world.

AN INTERPRETATION OF SIZE-NUMBER FORMS

It may be relevant here to refer to one very significant study of city-size distribution made⁸ by B. J. L. Berry⁹ for

38 countries and 4187 cities with over 20,000 population. From his study Berry arrived at two groups of hypotheses. The first hypothesis is that city-size distribution is not related to the degree of urbanisation. Primacy pattern is found both for highly-urbanised countries and for largely rural areas, and that it is also not related to the stage of economic development in a country. According to the second hypothesis the absence of primacy is the product of urbanisation in countries which are (a) larger than average, (b) have a long history of urbanisation and (c) are economically and politically complex. On the basis of this definition, the USA and Brazil fall in category (a), India and China and six European countries in category (b) and South Africa in category (c). Some countries qualify on all three grounds while Korea and El Salvador qualify for none. Or conversely, primacy is the product of city development in countries which are (a) smaller than average, (b) have a short history of urbanisation and (c) are economically and politically simple. Haggett¹⁰ points out that in this group of countries where primacy is prominent "Portugal, Spain, Austria and the Netherlands have capital cities which were developed to serve empires rather than the local city hierarchy, e.g. Vienna's size is logical in terms of the Austro-Hungarian empire rather than contemporary Austria. Other countries have either a commercial export sector superimposed on a peasant agricultural system (e.g. the 'dual economy' of Ceylon), or a strong primary export system (e.g. Uruguay) or a single 'westernised' city (e.g. Thailand)".

The conclusion that, if considered as a whole, India ranked with USA in her city-size distribution pattern which is taken as a product of India's long history of urbanisation may be justified to validate a statistical result. But it hardly accords with the reality that in India the level of urbanisation is of a very low order and its rank in economic development is considered to be below the median line in a list of thirty Asian and African countries.¹¹ Moreover India is a vast country. Her economic as well as urban development has been spatially very uneven, leading to growth of acute interregional disparities. Distinctive economic regions with

very long histories and aided by administrative, political and ethnolinguistic factors have grown around metropolitan complexes like Calcutta, Madras and Bombay. All these cities, and in particular Calcutta, were created by superimposition of commercial export sector on a backward peasant economy. Under these circumstances, search for the validation of rank-size rule may be worthwhile and meaningful in case of India only if it is made on the basis of these economic regions rather than lumping together the country as a whole. Taken separately the primary nature of city-size distribution becomes clear in each of the Indian regions, the north-eastern region standing well ahead of all others as we have already seen. Haggett's interpretation of size-number forms is therefore only a partial explanation of a phenomenon and does not clarify the complexities of Indian urban development.

THE METROPOLITAN EXPLOSION

Calcutta's metropolitan explosion is unrelated to mechanisation in agriculture or growth in industries, better transport linkages or more automobiles, automation and shifts in the scale of technology and growth in real incomes.¹² It is the expression of very slow growth in agriculture, economically moribund state of the lower order towns, the geometrical progression of rural and urban unemployment, all-round industrial stagnation and sharp rise in population. This alone can explain the fact that in a region where only 14.30 per cent of the total population live in urban areas, 38 per cent of this urban population crowds into an area of about 200 sqm and creates problems far beyond the capacity of the country's economy to solve them in the existing framework. And in the absence of any real economic breakthrough in the countryside, any new investment in Calcutta draws in more people and accentuates all the problems.

It may be of interest to note that even in economically developed Japan it is a superhuman task to effectively deal with the problems of Tokyo. Here is a rather long quota-

tion from *The World Cities*¹³ by Peter Hall that would make us realise the depth of the metropolitan crisis:

"Of all the world cities, Tokyo is richest in paradoxes. In terms of population it is the largest city authority, and the second largest metropolitan area in the world; but its public services are structured for a city between one-fifth and one half of the present size. Its factories produce some of the most technologically sophisticated products in the world; yet its wage levels and living standards are noticeably below those of other world cities considered in this book, and they contrast sharply in turn with relative poverty in Japan's provincial agrarian regions, only a few hundred miles away. Its rate of population growth is by far the highest in any of the very big cities of the world; it has the biggest problems in accommodating the extra millions. It is a metropolis where, in 1964, an elaborate network of express ways is in an advanced stage of construction, but where only 23 per cent of the city's ten million people enjoy main drainage. Of all world cities it is the one whose citizens have devised the most varied and original solutions to their problems; but also the one where almost all schemes have a habit of failing for lack of funds."

If Japan finds it difficult to finance all schemes for the development of Tokyo, we may well be aware of our own limitations.

The English built Calcutta as a colonial satellite of metropolitan London. Calcutta performed all the functions of a satellite—pumping out the wealth of the country after collecting them from its own satellites, the distant trading-posts throughout the entire northeast economic region. The wealth is still being siphoned into Calcutta with unabated intensity though the region remains poor, illnourished, underdeveloped and unprotected against calamities. Calcutta UA is a structure whose base is unsupported by a hierarchy of viable urban nodes. Every year the agglomeration is enlarging itself by about two lakh persons and the crisis deepens.

Calcutta's metropolitan explosion is the result of underdevelopment and the only remedy for it is agricultural

growth, growth of agroindustries and services in a large number of rural towns and the growth of infrastructural support in the region as a whole. In USA the rise of real income in the countryside draws people to the cities and metropolises. In India every crisis in agricultural production drives millions of jobless starving humanity to the urban agglomerations. A town-country relationship based on economic reciprocity of a high order can alone reverse the process of one-way traffic set in motion by the imperialists that still plagues Calcutta and for that matter all the metropolises in India.

REFERENCES AND NOTES

1. GOVERNMENT OF INDIA, Ministry of Information and Broadcasting, *India 1973*, p. 15.
2. *Imperial Gazetteer of India*, Vol 9, 1908, p 261.
3. SEN, ASOK, The Bengal economy and Ram Mohan Roy, *Symposium on Raja Rammohan Roy*, October 1972, New Delhi.
4. CENSUS OF INDIA (1971), Paper No 1 of 1971, Provisional population totals, New Delhi, April 1971; and Supplement, Provisional population totals, New Delhi, August 1971. All the population figures used in this chapter are based on these two publications. These figures have also been used by Asish Bose (see note 7 below).
5. SDASYUK, C. V., Some aspects of the formation of economic regions in the developing countries (A case study of India), *Problems of Economic Regionalisation in the Developing Countries*, Nauka Publishing House, Moscow, 1968, p 96.

This is a very significant publication brought out by the Oriental Commission, Moscow Branch, of the Geographical Society of USSR and the Geographical Institute of the USSR Academy of Sciences. It was published on the occasion of the 25th International Geographical Congress, New Delhi, 1968. The following papers included in the book are of particular interest: (a) Formation and structure of economic regions in the developing countries during the period of colonial dependence (V. A. Pulyarkin), (b) Some aspects of the formation of economic regions in the developing countries—a case study of India (G. V. Sdasyuk), (c) Urbanisation and formation of economic regions in India (L. I. Bonifatyeva).

6. HALL, PETER, *The World Cities*, World University Library, 1967, p 18.
7. BOSI, ASIS, *Studies in India's Urbanisation, 1901-1971*, Tata McGraw-Hill Publishing Co Ltd, Bombay-New Delhi, Institute of Economic Growth, 1973, p. 376.
8. MONI, SUNIL, An enquiry into Calcutta's primacy, *Indian Left Review*, New Delhi, Vol 2, No 5, pp 57-62.
9. BERRY B. J. L., City-size distribution and economic development, *Economic Development and Cultural Change*, 9, pp. 573-88 referred to by Peter Haggett (see note 10 below).
10. HAGGETT, PETER, *Locational Analysis in Human Geography*, Edward Arnold (Publishers) Ltd, 1969, pp. 103-7.
11. HAGGETT, PETER E., A framework for analysing economic and political change, *Development of the Emerging Countries, An Agenda for Research*, The Brookings Institution, 1962, p. 2.
12. BERRY, B J L, *Geography of Market entries and Retail Distribution*, Prentice Hall Inc, 1967, pp 8-9.
13. HALL, PETER, op. cit., p. 217.

SPATIAL AND TEMPORAL DISPARITIES OF URBAN GROWTH

The cancerous growth of Calcutta as a primary city surrounded by a backward agricultural hinterland and unsupported by any hierarchical structure of urban centres has become a subject matter of study of politicians, planners and social scientists in India and drawn the attention of urban researchers throughout the world. Proposals for the development of this metropolitan city have emanated from various studies some of which have also been taken up for implementation. The 4th plan has earmarked an allocation of Rs 140 crore for the city. Added to this are a number of major nonplan items like the second Hooghly bridge. The scope of this paper is not to review the various plan proposals but to place Calcutta's growth problems in the proper perspective which more often than not is missed by a casual observer.

We base our discussion on the premise that the gigantic growth of a single metropolitan area, not related to a system of urban nodes hierarchically arranged throughout a certain territory, the absence of medium-size centres and a heavy concentration of people in the primary city,¹ is an acute manifestation of presentday underdevelopment.

We also start from the premise that the problem of Calcutta is not one of very fast rate of growth but of retarded growth reflecting typical nonharmonic spatial development of an underdeveloped economy. The 8 per cent growth of Calcutta's population as against 33 per cent for the whole of West Bengal testifies to this nonharmonic spatial development.²

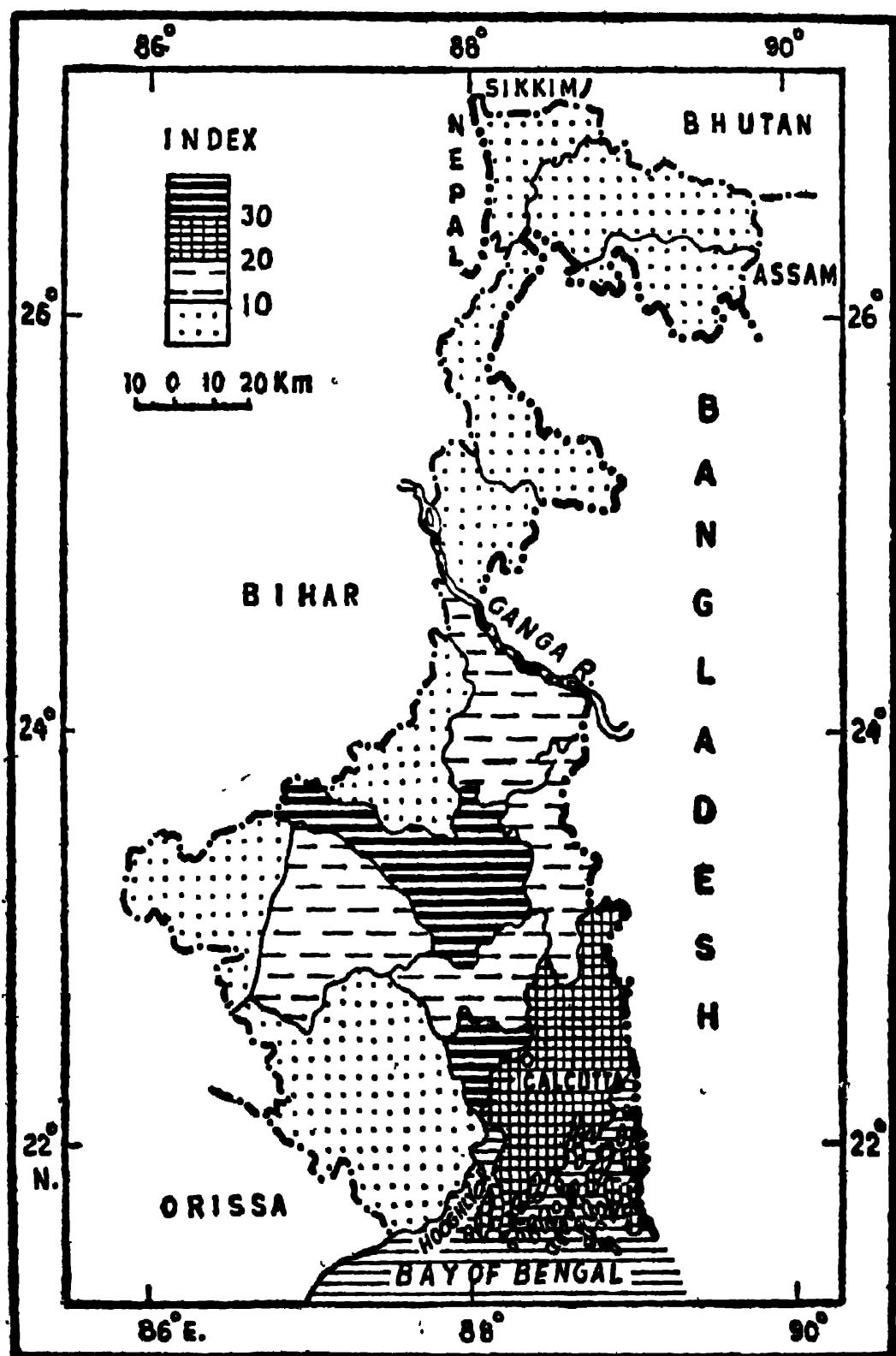
Density of population has often been taken as a key index of Calcutta's illness. Calcutta municipal area is 102.95 sq km with a total population of 29.27 lakh. The average density works out at nearly 28,571 persons per sq km. The

density per sq km of developed areas in 1961 was 39,387 as against 10,000 in New York, 22,000 in Ahmedabad and about 16,000 in Delhi. The average residential land density in Calcutta in 1961 was 7161 persons per hectare as against 4056 in New York, 554.2 in Ahmedabad and 478.0 in Delhi.³

Table 51 *Density of population per sq km in Calcutta*

Year	Population
1921	10,231
1931	11,863
1941	21,054
1951	26,211
1961	27,940

But these total and mean figures do not provide a clear picture of the uneven distribution of population in Calcutta. For example in 1961 there were 27 wards out of 80 (before regrouping of wards for the municipal election of 1965) with less than the city's average density of population. The real picture emerges if one studies the population densities of some particular areas like east Calcutta beyond the railway line, extreme northeast Calcutta and parts of the south and southwest Calcutta. Thus the 12 wards from Ultadanga to Jadavpur along the eastern margin of the city covered between them 29.7 per cent of the total area of Calcutta containing 19.8 per cent of the total population. The average density of this region was about 19,300 persons per sq km. The localities included in this region are: Ultadanga, Bagmari, Narikeldanga, Beliaghata, Pottery, Tangra, Gobra, Tiljala, Kasba, Dhakuria and Jadavpur. This is the eastern undeveloped region where open sewerage and service privy are still the rule rather than exception. In north Calcutta 5 wards spread over mainly Cossipore and Belgachia covered about 9 per cent of the total area of Calcutta and contained 7.2 per cent of the total population, the average density being 24,629. In the 3 wards of Chetla, Charu Market and Chanditala, there were 5 per cent of city's total population living in about 8 per cent of the total area of the city. The average density here was about 18,000 persons per sq km.



Urban population growth during 1951-61, variation in per cent.

Calcutta's vertical space is most illutilised. The Directorate of Anthropology of the Government of India has completed a survey⁴ of this problem the results of which are yet to be published. Rough estimates put buildings with more than 2 storeys over not more than 10 per cent of the city's area, while, one-storeyed buildings and hutments occupy nearly 25 per cent of the total area. About 7.5 per cent of the Calcutta municipal area houses officially recognised bustis or slums (population about 25 per cent) and 51 per cent of the population live in all kutcha and semikutcha houses. At a conservative estimate more than 25 per cent of the area of Ultadanga, Maniktala, Beliaghata and Chingrighata are occupied by bustis.

Thus the real nature of Calcutta's overcrowding becomes clear if it is noted that in the officially recognised slums, about 25 per cent of the city's population live in 7 per cent of the city's area while 78 per cent of the population live in 93 per cent of the total land area of Calcutta.

Table 5.2 *Urban population as percentage of total population by district (1951—1961)*

Districts	1951	1961	percentage of change
Darjeeling	13.1	23.2	+ 10.1
Jalpaiguri	7.2	9.1	+ 1.9
Cooch Bihar	7.5	6.9	— 0.6
West Dinajpur	5.8	7.3	+ 1.5
Malda	3.7	4.1	+ 0.4
Murshidabad	7.8	8.5	+ 0.7
Nadia	18.2	18.4	+ 0.2
24 Parganas	19.8	31.8	+ 2.0
Howrah	32.4	40.0	+ 7.6
Hooghly	24.6	25.9	+ 1.3
Burdwan	14.8	18.1	+ 3.3
Birbhum	6.5	7.0	+ 0.5
Bankura	7.2	7.3	+ 0.1
Midnapur	7.5	7.6	+ 0.1
Purulia	6.7	6.9	+ 0.2
West Bengal	23.88	24.45	+ 1.9

Source: Census of India, 1961.

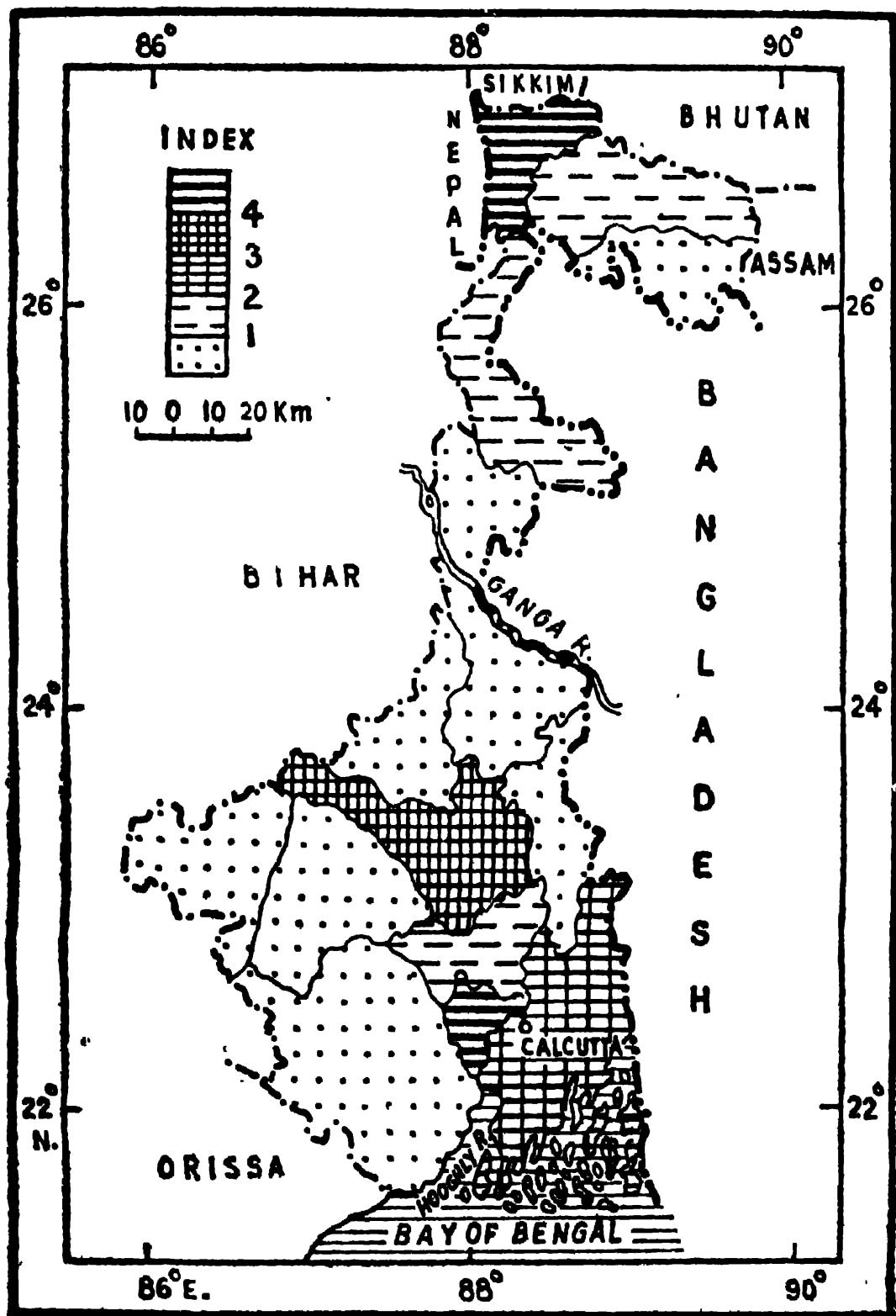
The volume of construction of new buildings per annum in Calcutta has been quite insignificant. The total depreciation of the existing buildings of Calcutta, according to the city architect, is much more than the total capacity outlay in building new houses. To meet the new demand and to replace the old structures, including slum housing, it is estimated that at least 25,000 dwelling units must be built annually in Calcutta for the next 30 years.⁵ Against this only less than 2500 are built each year.

Uneven density of population is not abnormal in a city. But Calcutta's overcrowding, total lack of normal amenities in low and medium density areas, the insufficiency of civic amenities in all areas and misuse of vertical space, the preponderance of the tertiary sector in occupational structure and the pressure of rural out-migrants are features of under-development reminiscent of the colonial period.

Calcutta's urban growth problem can be viewed in proper perspective if one scrutinises the present degree of urbanisation in the whole of West Bengal. Table 5.2 reveals, more than anything else, the fact that urbanisation in West Bengal has been marked by two features: Firstly, the total growth (merely 1.9 per cent between 1951 and 1961) is very slow verging upon insignificance. Secondly, this meagre growth is also spatially uneven. Thus, during 1951-61 one district recorded a negative growth, 7 districts recorded a growth of less than 1 per cent, 3 districts between 1 and 2 per cent and only 3 districts more than 3 per cent.

This truncated urban growth pattern becomes evident from another fact. About 95 per cent of West Bengal's total power consumption is accounted for by the CMD and the Asansol-Durgapur industrial region. The share of north Bengal's five districts in the industrial and commercial power consumption was even less than 0.5 per cent in the early sixties.⁶

If the number of workers engaged in manufacturing industries is a barometer of development, the picture West Bengal presents in this respect is not only frustrating but rather alarming. Out of the 15 districts of the state, there



Workers employed in manufacturing industries per 1000 of total population.

were in 1961 as many as 8 districts with less than 10 workers in manufacturing industries per 1000 of total population.

Table 53

Districts	Workers in manufacturing industries (per 1000 of total population)
Darjeeling	8
Jalpaiguri	6
Cooch Behar	5
West Dinajpur	5
Malda	6
Murshidabad	13
Nadia	6
24 Parganas	21
Hooghly	20
Howrah	31
Midnapur	8
Bankura	10
Birbhum	9
Burdwan	38
Purulia	9

Source: Census of India, Vol. I, Part I-A (ii)

Tables 5.2 and 5.3 indicate that while on the one hand West Bengal's districts are marked by preindustrial stage of urbanisation, on the other a very large part of the active urban population is employed in nonproductive spheres. Most of West Bengal's towns have not yet become centres of production. People who had previously done productive work in the countryside had taken up unproductive jobs when moved into towns.⁷

A study of the growth trends of the CMD towns of which Calcutta forms the apex will be viewing the same problem from another angle. In 1951 there were 35 towns excluding Calcutta in the CIR, the total area of which was calculated at 424.83 sq km. In 1961 the number of towns including Calcutta increased to 81. Out of these 45 were along the east bank and 36 along the west bank of the river Hooghly. These 81 towns included 43 nonmunicipal towns, one cantonment, two municipal corporations and 35 municipal

towns. These towns spread from Kalyani to Baruipur, from Bansberia to Uluberia and covered an area of 673 sq km. This is the built-up urban tract of the 1191 sq km of the CMD. Out of the 673 sq km area about 36 sq km are in Nadia, 114 sq km in Howrah, 324 sq km in the 24 Parganas and about 90 sq km in Hooghly.

The density in nonmunicipal towns is usually low. In the municipal towns excluding Calcutta the highest density of 23,607 persons per sq km is found over a small area of Titagarh (3.24 sq km). The lowest density is found at Rajpur (26.40 sq km) with 1078 persons per sq km. Table 5.4 shows the density distribution among the CMD towns.

Table 5.4

Density of population (per sq km)	No. of municipal towns in the CMD
Below—3900	7
3900—5800	8
5800—7700	10
7700—15,400	7
Above—15,400	3

Percentage variation of population between 1951 and 1961 shows that nearly two-thirds of the municipal towns within the CMD (excluding Calcutta) witnessed a positive rise up to 50 per cent, and about one-third more than 50 per cent. A detailed breakdown reveals a pattern which is slightly better than Calcutta so far as it goes. But when this is compared with the percentage of urban population in the three districts of the CMD in which these towns are located one gets a picture of complete urban stagnation.

These towns are examples of unplanned growth with narrow roads, precarious water-supply, open sewage, service privy and total neglect for economic utilisation of space. Each of these towns has an extremely congested ancient core consisting of dilapidated houses and overgrown markets, while the periphery is marked by scattered dwellings of in-migrants many of whom were victims of the partition

of 1947. The growth of population in these towns is hardly associated with the growth of productive jobs. The growth of nonproductive labour has acquired a specific character here. The nonproductive sphere of employment in these towns is linked with branches of the economy that had developed in the colonial period like retail trade and domestic services. The growth of population can hardly cover up the moribund nature of these towns.

Table 55

Percentage variation of population, 1951-61	No of municipal towns in the CMD (excluding Calcutta)
Below 0	1
0-10	3
10-20	2
20-30	5
30-40	3
40-50	7
50-60	3
60-70	3
70-80	3
80-90	3
Above 100	2

There is yet to be any comprehensive plan for the regeneration of these towns economically as well as from the physical planners' point of view. But there is no escaping the fact that only a reinvigorated 35 old municipal towns can in the ultimate analysis absorb a much larger population than today and can act as a strong filter to the large influx of rural out-migrants to the primary city.

Outside the CMD and within 100 km from the city centre on all sides there were 31 towns and urban centres in 1961 distributed over 6 lower West Bengal districts of Howrah, Hooghly, Midnapore, Burdwan, 24 Parganas and Nadia. This is Calcutta metropolitan region which is largely linked with Calcutta through various services, through large volume of daily travel and communication. This ring round

the CMD is mainly the area from which the city gets its major supply of vegetables, eggs, milk, fish, etc. The size of this region is about 23,000 sq km—in an arbitrary circle drawn round Calcutta with a radius touching Burdwan, Nadabdwip and Krishnagar.

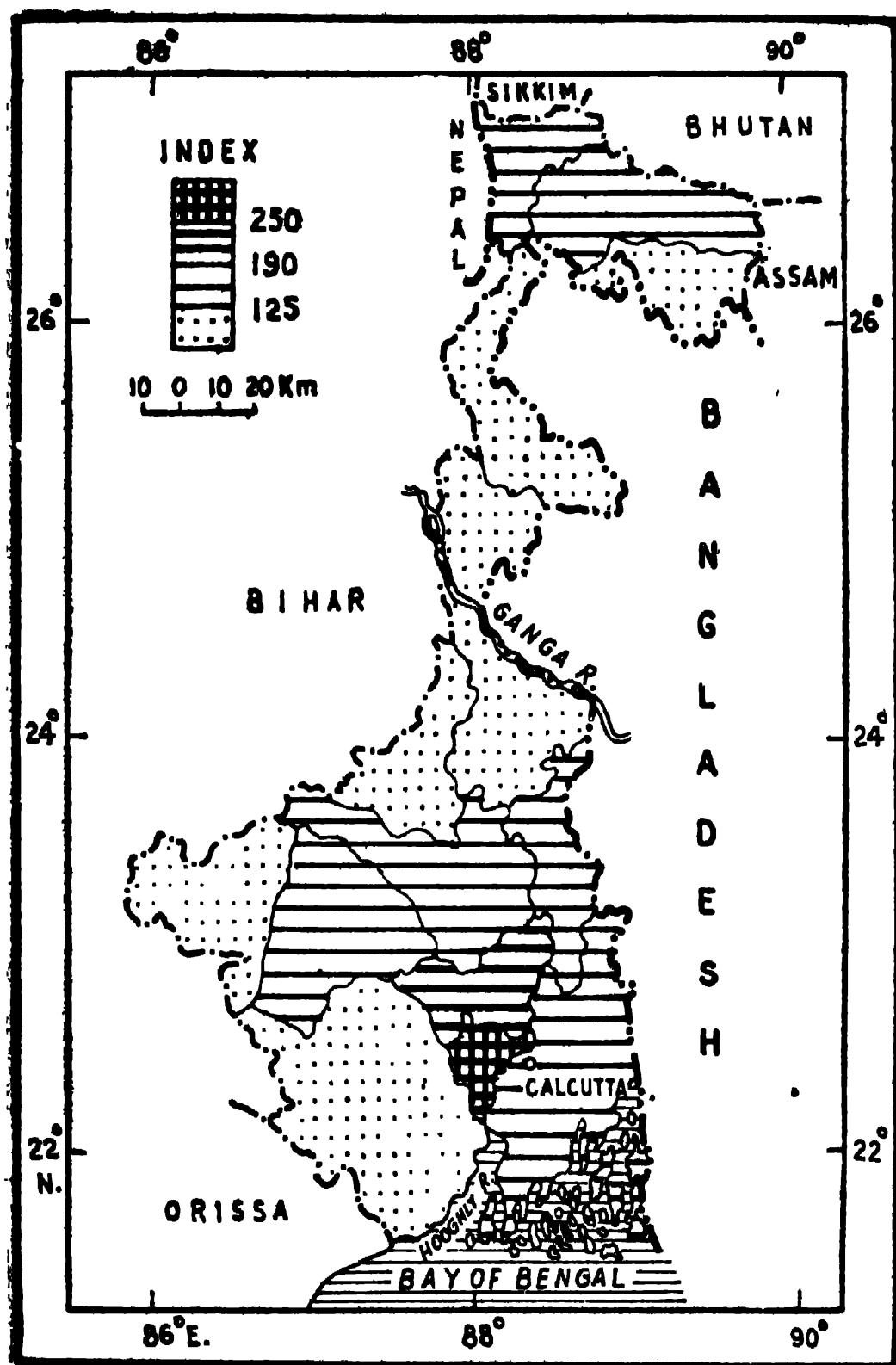
Towns have grown in this region at even a much slower pace. While the number of towns in the CMD almost doubled between 1951 and 1961, there were only 7 more towns in this region outside the CMD during the same period.

Table 56

Year	Growth of towns in the region excluding the CMD
1901	20
1951	24
1961	31

The same picture is obtained from a study of the rate of population growth in these towns. Between 1901 and 1951 only 4 of these towns were born and 4 towns showed a negative growth rate, 8 towns grew between 0 and 99.97 per cent, 6 towns between 100 and 199.99 per cent, and one town between 200 and 399.99 per cent. Between 1951 and 1961 7 towns were added to the list, 5 towns showed an increase between 0 and 24.99 per cent, 12 towns grew between 25 and 49.99 per cent, 5 towns between 50 and 99.99 per cent and 2 towns between 100 and 149.99 per cent.⁵

The estimated total space occupied in 1963 by the industrial units belonging to the survey universe in Calcutta was about 4400 ha or about 7.25 sq km. Thus only about 7.3 per cent of the total area of Calcutta maintained the existing industrial units. The total area covered by the industrial units in the CMD areas outside Calcutta was 29,800 ha or 61 sq km. This is about 5 per cent of the total area of the CMD excluding Calcutta.



Length of surfaced road (in km) per 1000 sq km of area.

Though in regard to the industrial space-use pattern Calcutta has higher percentage compared to the rest of the CMD, the figures for industrial employment concentration in 1961 speak differently. It is true that in 1963 Calcutta city had 2510 people per sq km engaged in industries, Howrah city had 2400 while the rest of the CMD had only 506 persons. But when one considers the ratio of the number of people employed in industries to the total number of people, Calcutta lags behind the rest of the CMD. Thus for every thousand persons Calcutta city had 85, Howrah city had 131 and the rest of CMD had 190 persons employed in industries. It is clear from this that the CMD excluding Calcutta has a much larger proportion of industrial population than Calcutta city.

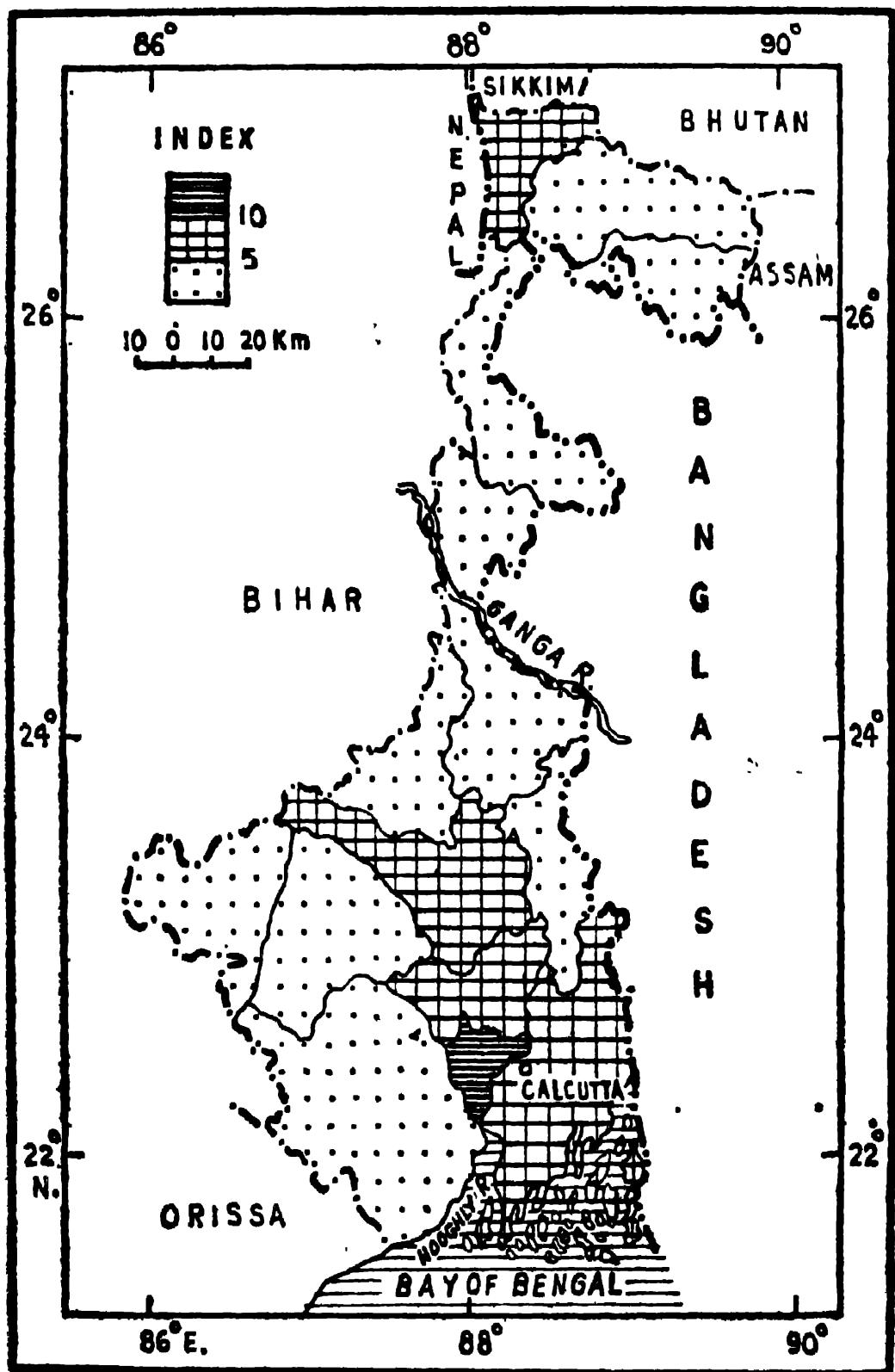
The position of the CMD vis-a-vis the rest of West Bengal makes an even more revealing study.⁹

Table 57 CMD as Percentage of West Bengal

Population	Area	Industrial employment	Registered factory employment
19.0	1.3	50.0	73.0

Thus 50 per cent of the total industrial employment in West Bengal is concentrated in the 119 sq km of the CMD which is about 1.3 per cent of the total area of West Bengal.

In the 31 towns of the Calcutta metropolitan region excluding the CMD the ratio of the number of people engaged in industries to the total population may be slightly more than 32 persons per thousand of population, which is average figure for the rest of West Bengal. The industrial employment situation of the metropolitan region excluding the CMD is thus characterised by an extremely low rate of growth. This is all the more true for the rest of West Bengal where there has been a relative decline in the proportion of persons employed in registered factories.



Establishments run on electricity; per cent of all industrial establishments.

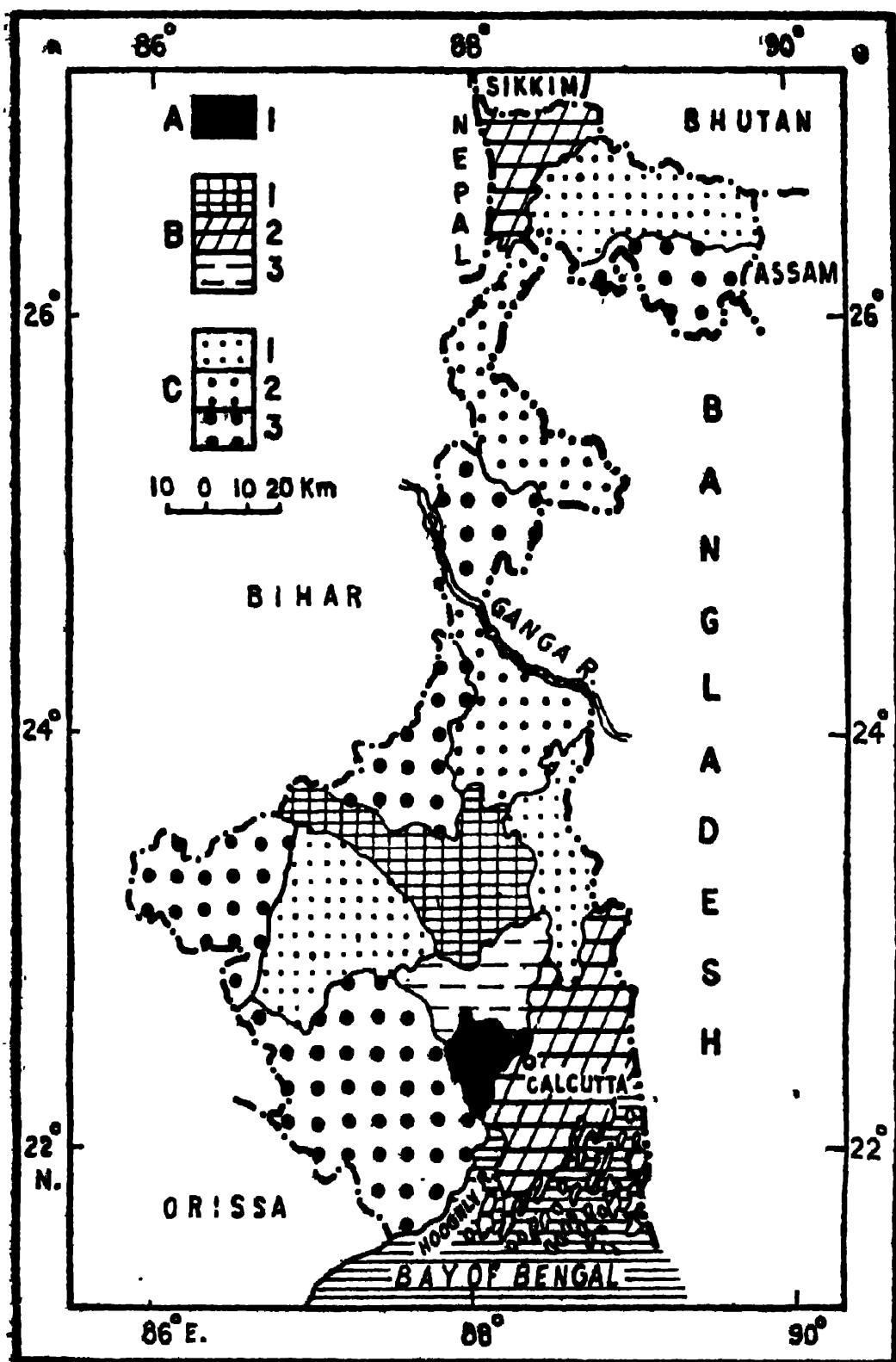
Table 5.8 Registered factory employment in different districts of West Bengal, 1951-61
(in lakh)

Districts	1951	1954	1959	1965	1966	Vol. of	
						increase (+)	or decrease (-)
						1961-66	1965-66
Calcutta & 24 Parganas	3.75	3.35	3.57	4.63	4.45	+0.88	-0.18
Howrah & Hooghly	1.92	1.88	2.03	2.76	2.53	+0.84	-0.23
Burdwan	0.40	0.38	0.54	0.76	0.77	+0.36	-0.01
Other 11 districts	0.48	0.49	0.61	0.65	0.65	+0.17	0.00
Total, West Bengal	6.55	6.10	6.75	8.80	8.40	+2.25	-0.40

The above discussion on the spatial and temporal disparities in urban growth of West Bengal takes the total population, occupational structure and particularly industrial employment, the growth of towns and interaction between all these factors as indicators of urbanisation. Other indicators like trade, cottage industries, population migration, communication linkages, education and other social indicators have not been considered. It is the belief of the author that the picture which emerges from the above discussion will not be altered if all the variables are correlated.

To sum up, the characteristics of West Bengal's urban growth are (a) the development of a single primary city surrounded by a metropolitan district not related to a system of urban nodes hierarchically arranged, (b) the extremely unbalanced internal social, economic and physical structure of the primary city, (c) the negative development of a 'density field' of functional interaction, (d) truncated distribution of towns, (e) urbanisation unrelated to largescale production, urban centres remaining substantially dependent on agriculture and nonproductive occupations and (f) acute growth of intraregional urban disparity.

To go back from where we began, Calcutta's ills and for that matter the ills of the urban cluster of the CMD cannot be cured without a balanced economic growth of the whole of West Bengal. It is time that we took note of this reality



Levels of urban development; Scores A 1 represent highest development, B 1, 2, 3—intermediate development and C 1, 2, 3—lowest development.

and planned accordingly. One Hooghly bridge and a ring road cannot change the look of preindustrial urbanisation of West Bengal.

REFERENCES AND NOTES

1. SILVA, E. F. and SOTO, M. V., Geographical consideration of under-development: a Latin American viewpoint, *Developing Countries of the World*, National Committee for Geography, Calcutta, 1968.
2. MITRA, ASOKE, *Calcutta, India's City*, New Age Publishers Private Ltd, Calcutta, 1963.
3. BENGAL CHAMBER OF COMMERCE, *West Bengal—An Analytical Study*, Oxford and IBH Publishing Co, Calcutta, 1971, p. 64.
4. CALCUTTA METROPOLITAN PLANNING ORGANISATION, *Calcutta's Problems—Calcutta's Future*, Calcutta, 1965.
5. —— *Basic Development Plan, 1966-86*, Calcutta, 1966.
6. GOVERNMENT OF WEST BENGAL, *Economic Review, 1969-70*, Calcutta, 1970.
7. BONIFATIYVA, I. I., Urbanisation and formation of economic regions of India. *Problems of Economic Regionalisation in Developing Countries*, Nauka Publishing House, Moscow, 1968, pp. 123-26.
8. KAR, N. R., Central functions, service facilities and urban hierarchy in lower West Bengal, *West Bengal*, Firma K. L. Mukhopadhyay, Calcutta, pp. 186-212.

The book also contains an article by Tarun Bikas Lahiri on "Urbanisation in West Bengal" (pp. 176-85) in which, while correctly pointing to the "polarisation of urban population in West Bengal" as expressed in the heavy growth of Calcutta at the expense of older centres, the author summarises the reasons as. (a) introduction of a new production system in the Calcutta area, (b) concentration of capital, (c) alignment of modern transport routes with Calcutta as the focal point and (d) the refusal of the British to allow export of most of the traditional goods from Bengal.

One could, in this context, refer to the formulation of R. P. Dutt (*India Today*, Victor Gollancz, 1940, p. 165) when he says: "The real picture of modern India is a picture of what has been aptly called 'deindustrialisation'—i.e. the decline of the old handicraft industry without the compensating advance of modern industry. The advance of factory industry has not overtaken the decay of handicraft. The process of decay characteristic of the nineteenth century has been carried forward in the twentieth century and in the postwar period."

Thus it was not just the refusal by the British to allow export of

most of the traditional goods from Bengal, but a policy of 'deindustrialisation' that led to the destruction of old seats of manufacture and the use of Calcutta as the imperial outpost for trade, commerce, administration and ancillary activities. The first three points mentioned by T. B. Lahiri are manifestations of the same policy. Even with the introduction of a new production system and concentration of capital in Calcutta, the growth in the rate of industrial production after 1914 was slower than before 1914. Thus the growth of Calcutta as a satellite of London was closely linked with the run of northeastern India, of its traditional manufactures as well as its agriculture.

9. GOVERNMENT OF WEST BENGAL, *Report of the Survey Committee on the Engineering Industry in West Bengal, 1951-1968*, Calcutta. 1968.

CALCUTTA—THE COLONIAL CITY

Spatial structures of cities have been studied by many urban geographers. Yet the present understanding of the variety of causes and consequences of spatial pattern in cities is meagre because the subject has come under investigation only recently. There is of course no dearth of literature with data on some of the advanced countries, notably the US and European cities, and theories on the logic of structures of these cities. The concentric zone theory, the theory of sectors or of multiple nuclei as well as the excellent paper written by Chauncy D. Harris and Edward E. Ulman¹ on the nature of cities contain conclusions drawn from city conditions under advanced economic development. But there is yet to emerge any serious work on the structure of cities under colonial domination and metropolitan cities in acutely underdeveloped regions or even a recognition of the necessity to study these independent of European or US models.

The structure of a city depends on the way in which people organise themselves in a particular economy to cope with the friction of space. Structure is a dependent function of geographical environment, traditional habits of people and more than anything else, the laws of economics. Calcutta, for example, has been controlled by the Hooghly river in the west and swamps all along the eastern border. As a consequence of this the city grew northward and to the south as distinct from the neat rounded agglomerations of London, Paris or Moscow. These physical barriers which pressed Calcutta to its existing elongated shape have influenced its structure. The heat and damp of the tropical monsoon climate and the low deltaic site had their effects in modifying such structure, particularly in so far as these had moulded the traditional habits of living of the people.

But what finally decided the internal design of the city was the role assigned to it by its administrators who laid the city and governed it for two hundred and fifty years.

INTERNAL STRUCTURE OF CALCUTTA

Since 1698 when the East India Company got three villages on lease from the nawab at a rental of Rs 1300 a year, or more appropriately since 1717 when the trade and influence of the company had so expanded that they took a further lease of 38 villages in and around the site of the presentday Calcutta, the city has never really been able to discard its colonial character. Till 1911 when the capital was removed to the newly-built Delhi, Calcutta was in any case the first city of the imperial colony from the point of view of both administration and commerce. But even after the migration of the capital, Calcutta remained till the end of the British occupation and even after the citadel of British capital, as embodied in the power and glory of the Dalhousie Square.

The English rulers from the very beginning had planned Calcutta in the typical colonial pattern. While the white town grew around Dalhousie Square or Lal Dighi, the first official settlement of the East India Company, the native or the black town consisting of the rest of the villages was spread along the northern part of the city. The white town saw the first pucca mansions, surfaced roads, sanitary and conservancy services, filtered water-supply and gas and electric light. But right up to the middle of the 19th century the native town remained a conglomerate of kutcha houses, huts, tanks, jungle, dirty unsurfaced roads and open drains with no lighting or conservancy arrangements. Even in 1935 it was written that "although the European quarter of the town is distinguished for its fine public buildings and commodious dwelling houses, the quarters occupied by the Indians present a very different appearance, their houses being in most instances built of mud or bamboo and mats, and the streets narrow and unpaved. Great havoc was done here by the cyclone of 1864, which destroyed 40,700 native

houses; and those of 1867 and 1870 were likewise very destructive."² The dividing line between the native town and the white town was the present Lenin Sarani or the Dharmatala Street of the past. As the white town grew in size it spread along Chowringhee towards the south, and the black town moved northward and eastward.

The racial segregation imposed by the English continued in one form or other till the end of the second world war and, apart from the native ghetto, it had many other facets. The travel by palanquins was a monopoly of the white rulers at the beginning and the natives were prohibited from using this royal city transport system. Some roads and parks were out of bounds for the black-skins, and till the other day a swimming club belonged exclusively to the whites.

The native town contained people who had come to Calcutta in search of jobs and moneylenders, merchants, absentee landlords and people attached to the bandwagon of the imperial rule. It was therefore quite common to find a 'palace' of a Bengali landlord amidst the squalor of north Calcutta, for even a Bengali maharaja had no place under the sun in the white town.

The racial segregation imposed on Calcutta had its bearing on the social topography that gradually developed in Calcutta. While the native town was infested with dirt, poverty and disease, the English built churches, luxurious markets, public and private mansions, wide roads and parks for their own use and amusements. All the firsts in Calcutta were in the white town: street-watering was commenced in 1818, streets were lighted with gas in 1857, supply of filtered water began in 1874, electricity began to light the mansions in 1899, Sir Stuart Hogg Market was opened in 1874 and expanded in 1909 and so on and so forth.

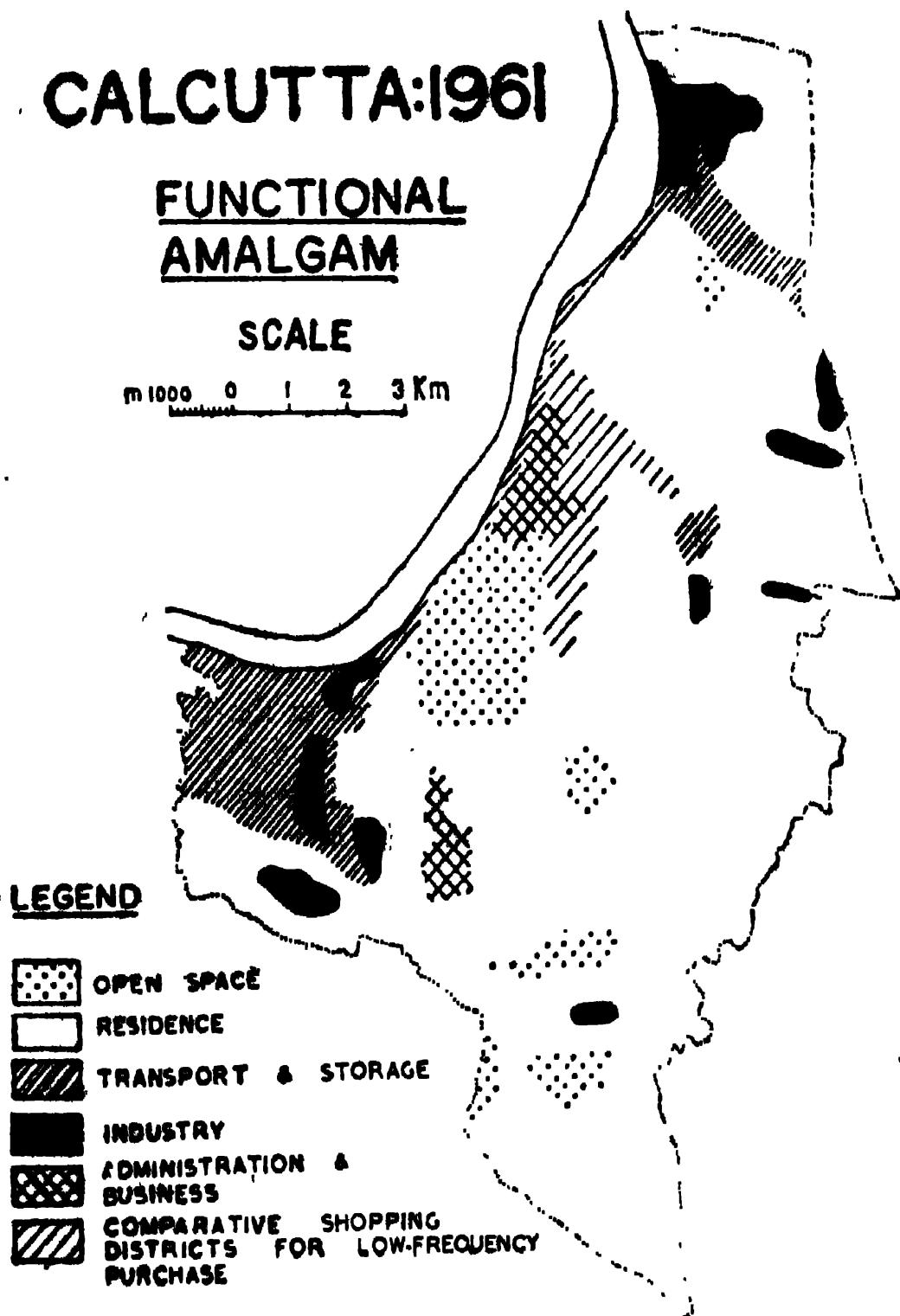
Calcutta was important to the foreign rulers as a slave is to his master. The English spent for Calcutta only when an improvement in city life was directly related to their ever-expanding trade and commerce.

The racial segregation that marked the early years of

Calcutta imperceptibly merged with class segregation and cultural segregation that appeared in later years. Class segregation is of course a universal phenomenon in all capitalist cities where, till the development of automobiles and rapid transport system, the central business district lay surrounded by upper-class residential areas followed by middle-and-lower-income residential areas in concentric outer rings. With the introduction of automobiles the situation began to change rapidly with upper classes moving away from the CBD to secluded, spacious and over-all better sites while the lower-income groups remained clustered to mass transit routes. With the enlargement of the CBD the whole city expanded as if drawn by some powerful centrifugal force. Middle-and-lower-income residential areas slided outward from the CBD along the mass-transit routes. Calcutta was no exception to this process. But class segregation superimposed on racial segregation created anomalies which have grown since the departure of the British. Calcutta has grown much beyond the south of Park Street but the nostalgic memory of the glory of areas lying to the south of Park Street still haunts the nouveau riche or the middle-class aspirants.

Poverty and splendour lie so close to each other in Calcutta that it has always attracted the attention of foreigners. Calcutta grew so fast that there was hardly any time to clear all the slums before new mansions could be built. Many of the slums were owned by landlords who minted sizable amounts from slum-dwellers. Slums were needed for servicing the mansions and their occupants, or how else could the rich get servants, cooks, darwans, chowkidars, cleaners, gardeners, dhobis and the rest? Labour was abundant and cheap and it paid to keep slums within the city, in fact nearer the mansions. There was hardly any other city in India of Calcutta's size and importance where household occupations became so important during the British rule.

The economy of Calcutta was based purely on commerce and administration till 1859 when the first jute mill was established in Rishra, a few miles north of the city proper.



Source. S. C. Chakraborty, *Delineation of Planning Areas : An Experiment* on Calcutta 1961, *Geographical Review of India*, March 1972.

Round about the same time the first railway line between Howrah and Raniganj started operating. Horse-driven trams began carrying goods to Calcutta port through Bowbazar Street, now Bepin Behari Ganguly Street, Dalhousie Square and the area on which stands the existing customs house from 1875. The first steamer constructed at the Kidderpore docks was launched in 1823 and the first vessel entered Kidderpore docks in 1882. Thus for about one hundred and fifty years Calcutta remained a purely commercial-cum-administrative-cum-service centre. In the next period jute and engineering industry, the two other pillars on which the economy of Calcutta rested, grew. The number of jute mills had increased to 90 by 1925-26 and to 106 at the time of the partition of the country. The light engineering industry grew as ancillary to the railways, jute and other industries. But the working force drawn to serve these sectors was not really settled in Calcutta proper. The Kidderpore dock area on the western fringe, Maniktala-Beliaghata on the eastern fringe and Cossipore on the northern extremity developed as working-class areas where industries connected with textiles and engineering constituted the attractions. Meanwhile transport-and-storage (railways) areas developed in Chitpore in the north and around the Kidderpore docks in the southwest.³ Thus the heart of Calcutta had never really seen any concentration of factory workers till much later when small-production units began to grow well within Calcutta's municipal limits.

Calcutta proper contained people drawn from all over India for commerce in particular and for administration. The pattern of town structure that grew on its basis has not changed even after the British left and the levers of commerce were transferred from the British to the hands of their Indian counterparts.

Today the core of Calcutta, the central business district, has expanded from the Dalhousie Square through Chowringhee, Park Street, to areas in and around the old European town. The upper-class residential areas have migrated to areas further to the south and southwest—to the Southern Avenue, to Alipur and New Alipur. The rest remains a sea

of two-and-three-storey buildings interspersed with slum hutments and enclaves of mansions, peopled by office-goers and hawkers, petty shopkeepers, rickshaw and handcart pullers, casual labour and people engaged in domestic services. Today a few multistoreyed buildings are going up but mainly in the extended CBD area and that too at a much slower pace than Bombay. The rest of Calcutta or more precisely almost the whole of Calcutta remains dwarfed, dirty beyond description, diseased, ill-serviced, congested and suffocating.

Manifestations of this prolonged illness are writ large on the body of Calcutta city. We have already discussed the question of overpopulation of this giant metropolitan complex. Let us now glance at a summary statement of the other ills in order to comprehend the dimensions of the malady that has gripped Calcutta.

THE AGONY OF CALCUTTA SLUMS

There are about 6 lakh houses within the limits of the Calcutta corporation. This includes nearly 3000 slums spread over one-twelfth of the area of the city. Here lives one-fifth of the city population. But tenements and houses which are not listed but are otherwise in all respects part of the slums of Calcutta house, together with the official slums, over one-fourth of all the people of Calcutta, i.e. over 7 lakh. Fifty per cent of these slums are located along the eastern margin of the city in Narikeldanga, Ultadanga, Maniktala, Beliaghata and Chingrighata.

The term 'busti holding' refers to the pattern of ownership—not to physical layout. A single busti, as a physically distinct area of continuous huts, may have a single owner or may be divided into several separate holdings. For a variety of reasons—subdivisions or amalgamation on inheritance, sale or clearance—the total number of these holdings fluctuates from year to year. The magnitude of the slum problem can be gauged from the State Statistical Bureau survey⁴ conducted in 1958-59:

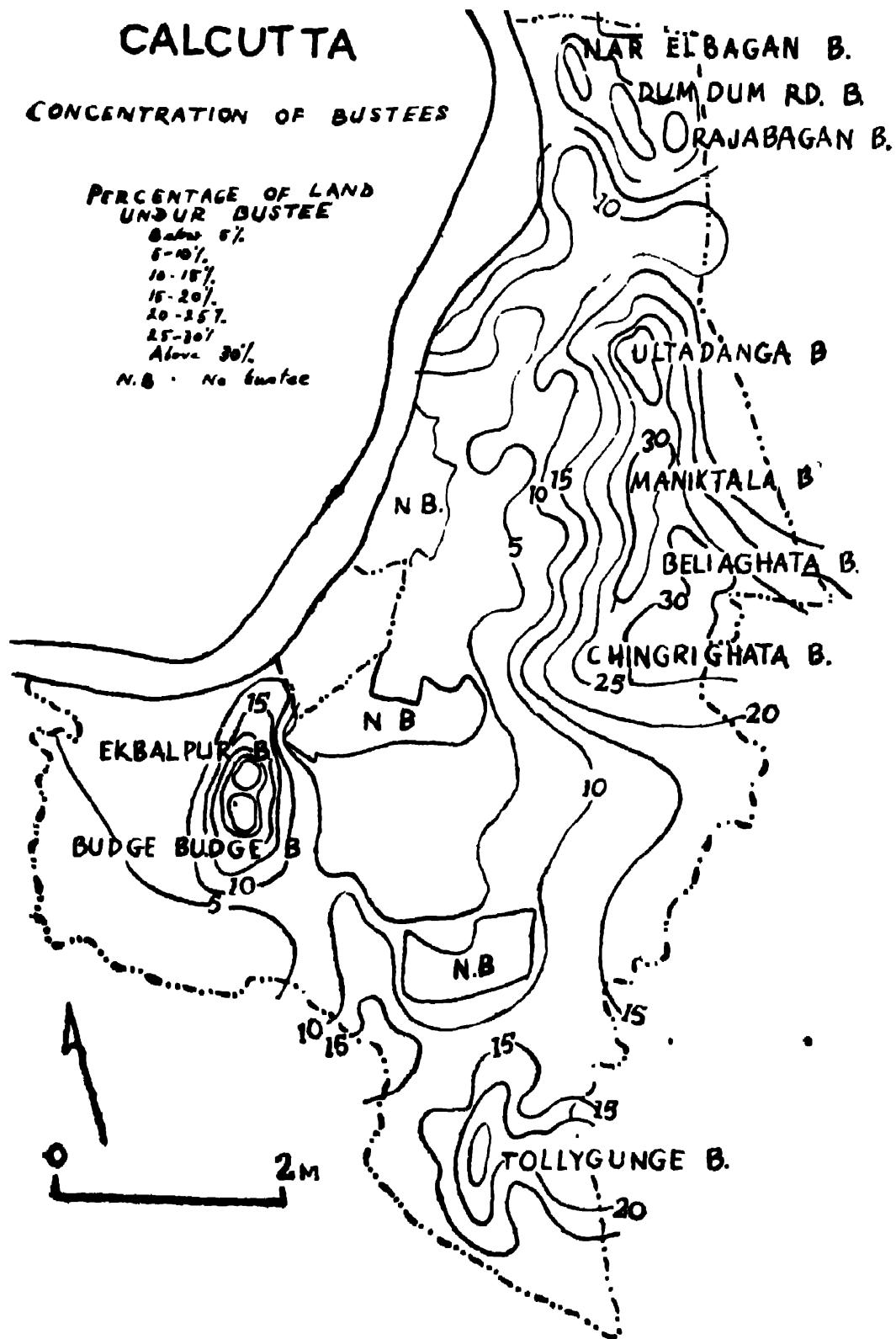


Table 6.1. *Calcutta bustis—total figures*

Category	Popula- tion	Total area in acres	Total area in cottas	No of busti hold- ings	No of huts
I central sewered area	171,692	240	14,741	885	6,206
II fringe sewered	213,588	450	27,194	1,074	8,046
III unsewered	299,836	1,011	61,175	1,260	15,739
Total	685,116	1,701	103,110	3,219	29,991

Bustis are found throughout the whole area of the city (with the exception of five wards in the central part of the city) though they may cover as little as 0.50 per cent of a ward or as much as 30.5 per cent. The sewered areas contain slums of small size with little or no open space and a very high density. In the unsewered areas the slums sprawl over wide areas with a good deal of slum land vacant or covered by large ponds. These slums have relatively low density of population.

A report of the World Health Organisation⁵ candidly describes the living conditon in these slums in the following manner :

"Within a limited orbit, however, the Calcutta area still forms the startingpoint for a long-distance spread of cholera. In the central part of this area (situated along the banks of the Hooghly river and the two canals arising from it) are located the terminals of the two principal railway systems which connect Calcutta with the rest of the country, and it is along their routes that the spread of the infection appears to occur.

"Referring to the results of a survey of this distressing situation, Seal (1959) stated that two-thirds of the cholera attacks encountered occurred in the busti huts, even though

these constituted only 5.6 per cent of the houses in the city... Comparing the cholera incidence in the busti and the nonbusti type of households during 1958, Bhattacharji and Majumdar found that, 'although according to the 1951 census the busti people formed only 26.6 per cent of the total population of the city, the percentage of cholera cases in the former was as high as 43.8 per cent...'

"These great deficiencies in sanitary facilities result in the unenviable distinction which the area now has with respect to cholera and other gastrointestinal diseases. In India the region of endemic cholera falls within the state of West Bengal with its nucleus in Greater Calcutta and dominantly in the busti population, ill provided with even elementary sanitary facilities. The cholera situation has great significance not only to West Bengal and all of India but to the world at large."

The situation in the slums of Calcutta more than a decade ago as described in the report has hardly undergone any change.

HOUSING IN METROPOLITAN CALCUTTA

The Basic Development Plan (BDP) for the Calcutta Metropolitan District, 1966-1986⁶, points out that housing presents the most graphic portrayal of the crisis of metropolitan Calcutta. The existing shortage in the area is immense. The quality of housing that does exist is poor on the average and at its worst indescribably squalid. Shelter is so basic a human need and its condition so deeply affects the character of everyday life that this must be regarded as one of the most tragic of the CMD's current defects.

According to the BDP, of the 6.7 million people in the CMD in 1961, 3,66,000 were housed in institutions like hospitals, colleges, jails, etc. At least another 30,000 had no housing at all. (In 1973 it had gone up to 50,000.) These were the pavement-dwellers of Calcutta. This figure is certainly on the low side of a series of estimates of how many people actually live on the streets in Calcutta. The real number is extremely difficult to compute, fluctuating greatly

with seasons; but the existence of this group is a fact of life in the city and its suburbs.

The remaining 63,25,000 were in 1961 the 'household population'—i.e. people residing in some form of noninstitutional shelter. Altogether they occupied 13,29,000 housing units, providing on an average one unit for every 4.76 persons. The ratio itself is not particularly high. The real problems of the existing housing supply arise from two other factors. First, most of the units are extremely small in relation to the number of people who are forced to live in them. Second, the majority are in a squalid condition with none of the amenities of decent homes.

The BDP has estimated that 77 per cent of all Calcutta families have less than 40 sq ft of living space per person. In 1961 the average rooms per unit of family were as follows: Calcutta—1.61, other CMD (urban)—1.57, CMD (rural)—1.28 and CMD total—1.55. To accommodate the estimated population of 1986 an additional 84 per cent of the existing housing space of 1961 will have to be built!

And here is a quotation from a report of the CMPO⁷ which draws the picture in all its nakedness:

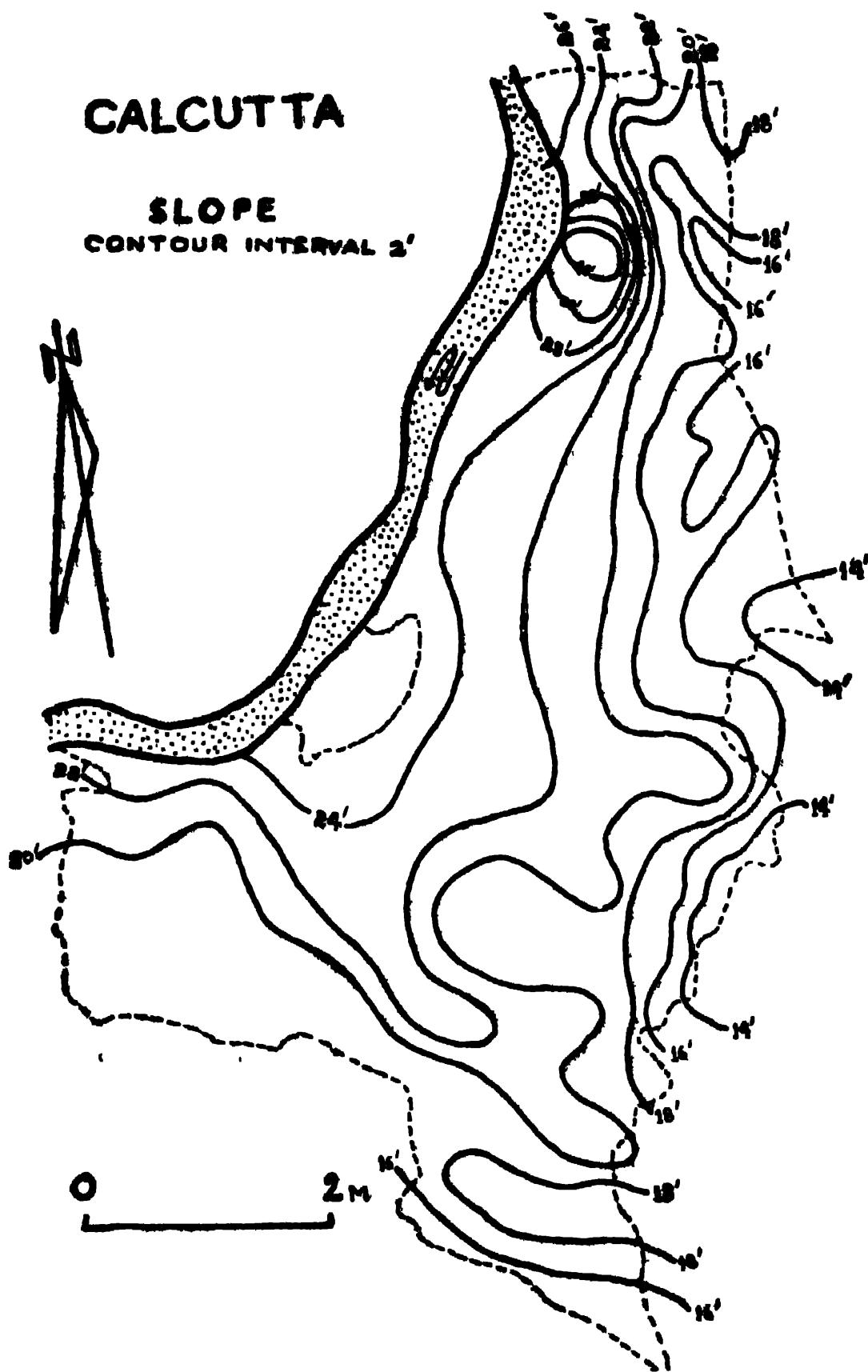
"The results of the present failure to provide for adequate and sanitary housing, even at minimum standards, to keep pace with population expansion, are visible throughout the cities of Calcutta and Howrah, and in every municipality of the CMD. Everywhere the picture so far as housing is concerned is one of congestion, insanitation, inadequate water-supply, extensive busti areas, high rents and premiums. Everywhere there is a great deal of illegal occupation and squatting on public and private lands—whether of refugee colonies built out of necessity on the vacant lands of absentee landlords, or of pathetic clusters of squatters in tattered and improvised shelters on public pavements, on the municipal refuge-dumps, and indeed on any vacant site. The urban environment in metropolitan Calcutta is probably deteriorating faster through the sheer inadequacy of housing, with its attendant evils than through any other single cause."

When such is the situation in housing, land prices soar higher everyday. Today none except the government or the big-business houses can actually build houses within the municipal limits. Even in the areas where urban renewal has been made possible by the CIT, the policy of auctioning land to the highest bidder has accentuated the grip of big business over Calcutta. What proportion of Calcutta is at present sold out to the business houses is anybody's guess but a newspaper report says that there are 337 persons in Calcutta each owning land valued at Rs 4 lakh, 30 persons each owning land valued at Rs 40 lakh, 7 persons each owning land valued at Rs 1 crore and at least one person is the owner of land the value of which is above Rs 3 crore. Professor Nirmal Bose⁸ in his survey of Calcutta noted this feature and lamented that marwaris were buying up Calcutta faster than anyone could guess. It would have been more appropriate for him to conclude that Calcutta was being bought up by the big business not for its improvement but for speculation and profit. Real-estate speculation has become big business in this giant metropolitan complex.

WATER SUPPLY, SEWERAGE AND DRAINAGE

The geographical parameters for water-supply, sewerage and drainage are determined by the location of the CMD within the lower deltaic plain of the Ganga river system. The region is underlaid with sediments deposited in successive stages by the Ganga and its tributaries, and consists of layers of clay, clay and calcareous concretions, peaty intercalations, sandy or silty clay, and silt and fine to coarse sand. It is believed that the thickness of the sedimentary fill is more than 10,000 feet. In the north of the area, the topsoil is mainly sandy with some areas of stiff clay, while in the south, the topsoil consists of clayey loam in the low areas, sandy loam or pure loam.

Because of the reduction in upland discharge, the Hooghly river is at present subject to salinisation which threatens its usefulness as a community water-supply source. Further



the reduction in discharge has brought about heavy deposition of sediments on the river bed.

The ground-water studies reveal that CMD is a part of the Bengal basin which is a huge tectonic trough and is blanketed by a considerable thickness of quaternary alluvium which overlies a vast layer of tertiary and mesozoic sediments. The quaternary deposits are the principal repository of the ground-water in the CMD.

It has been found out that the major aquifer system consisting of coarse to medium grained sands, occasionally mixed with gravel, occurs generally within the depth-span of 150 to 450 ft below the land surface in the Calcutta and Howrah area. This aquifer system can yield copious supply of water. The large regional extent of the aquifers in the northern part of the Greater Calcutta area and the conditions of storage and transmissibility indicate that this particular area holds a very good prospect for large-scale development of the ground-water resources.

With minor exceptions, municipal sewer system does not exist beyond Kalyani, Serampur, Bhatpara, Titagarh and Calcutta. Generally raw sewage is discharged to drainage ditches in other areas. Except within areas served by the Calcutta combined systems, drainage is by means of ditches and canals, generally in an easterly direction to the Kulti river on the east bank and directly or indirectly to the Hooghly river on the west bank.

Calcutta has a dual water-supply system—unfiltered water is supplied straight from the Hooghly river after chlorination and filtered water comes from the Palta water-works whose present capacity is about 120 mgd. The Palta supply is supplemented by tubewells, deep and shallow or more precisely large and small diameter tube wells, the total quantum being 25 mgd. This capacity supply can hardly be called even near-adequate particularly in view of the fact that nearly half a million people commute to Calcutta every day and the total population of the city rose to nearly 32 lakh in 1971.

In other areas of the CMD the situation is far worse. Nearly 4 million people receive municipal supply of water

averaging less than 10 gcd (gallons per capita per day), of whom about half receive substantially less. Large numbers of people use readily available and undoubtedly polluted surface-water sources such as ponds and streams. One could do well to remember in this connection that in a tropical country like ours domestic requirement is considered to be not less than 60 gcd! And then Palta can hardly ever reach its capacity and a very large number of large and small diameter tubewells remain idle every day for want of repairs or mechanical trouble. Meanwhile reduced flow through the Hooghly river has increased the salinity of water near Palta which has become ten times more than what is considered suitable for human consumption.

The sewers of Calcutta are in a near-choked condition and drainage has become worse with the silting up of the outfall channels and reclamation of the Salt Lake area. Waterlogging in Calcutta becomes a nightmare for inhabitants during the rainy season which lasts from June to the end of September.

Calcutta has about 15 sq m of open drains, 40,000 service privies and 2200 tons of daily garbage to be removed. Only about 50 to 60 per cent of the garbage is actually removed every day to the dumping ground at Dhapa. At best, when emergency measures are taken, 70 per cent of the garbage is cleared and the rest goes on piling and spilling over footpaths and roads. It is not for nothing that some one characterised Calcutta as the second dirtiest city of the world—Karachi being the first!

ROADS AND PUBLIC TRANSPORT SYSTEM

Municipal Calcutta has about 460 m of roads and public conveyances range from rickshaws pulled by human beings to motor cabs. In sheer variety of conveyances Calcutta must be unique among all other cities in India.

The man-driven rickshaw is an improved variety of the wheeled dak-palanquin of the early British period, which in its turn was a refinement on the ordinary palanquin. In the heydays of palenquin, there were about eleven thou-

sand bearers mostly from Orissa who earned their living in Calcutta. Today over 25 thousand rickshaws, mostly drawn by pauperised in-migrants from Bihar, are an important means of transport for short distances, particularly during the wet days of the monsoon months. Such indignity of human labour continues to be a normal fact of life in the city.

About two decades ago the STC buses first started carrying passengers in Calcutta. Till then Calcutta was the paradise of private-transport agencies. By 1961-62 there were about 800 STC buses plying on various routes gradually replacing the private service. The State Transport Corporation built up a huge workshop for repairs which according to expert opinion was equipped even to manufacture engine parts, not to speak of the frames and bodies of the buses. But meanwhile something strange happened. From the very beginning the corporation ran at a loss, which started mounting with every passing year. The STC had the monopoly but it could hardly put on the road more than 70 per cent of the vehicles on any one day, not to speak of meeting the ever-increasing demand for more. In 1960-61 the STC buses carried nearly 50 lakh passengers. Then at last the monopoly was surrendered, once again private companies were allowed to operate within Calcutta city limits and today the number of privately-run buses and the number of routes on which they ply are rapidly on the increase.

The Calcutta Tramway Company was originally incorporated in England. It was interested in maintaining and improving the services till it paid well. Then a time came when the company realised that it was more economic to suspend all maintenance and transfer the entire profit to England. When the state government took it over in 1969 there were about 400 trams and the number of 'running' trams was going down at the rate of five per year. The Calcutta Tramway Company today is also a losing concern running dilapidated noisy coaches on unrepainted track.

Commuters to Calcutta can now use electric suburban train services. In 1960-61 the number of commuters was

over six lakh. Today, though no exact figures are available, there is no doubt that it has gone up considerably. The introduction of electric trains has certainly eased the daily horrors of travel for lakhs of people. But the inadequacy of this service and in particular the failure to keep pace with the ever-increasing demand has put this mass transport system into jeopardy.

The Calcutta Corporation Act decided that not more than 15,000 handcarts be given licences to operate within the city limits. But unofficial estimates at present put the number at nearly twice that figure. Then there are peddlers on wheels, trucks of all descriptions, recently introduced minibuses for better-off middle classes, taxis, hackney-carriages drawn by horses, bullock-carts, cycles, scooters and motor-bikes, and of course private cars. In 1962 one estimate had put the total number of vehicles of all descriptions on Calcutta streets at 1,03,967. This included 80,000 motor cars. With usually narrow roads made narrower by hawkers encroaching on all important roadsides and kerbs, one can imagine the situation at peak hours in many areas in and around the CBD, particularly the approaches of the two railway stations on both banks of the Hooghly.

Neither in width nor in strength of surface materials are Calcutta roads built to withstand the heavy daily traffic. The monsoon waterlogging particularly plays havoc with pitched surfaces, turning them into death-traps of cars and pedestrians alike.

One could list numerous other problems that the inhabitants of Calcutta have to experience in their everyday existence. In the next chapter we shall also discuss some of the measures taken up by the government, the Municipal Corporation and the various statutory organisations engaged in planning for and making Calcutta habitable. Here the point to note is that firstly, the dimensions of the problems of Calcutta are such that piecemeal solution of isolated civic problems can no longer have any effect. Secondly, an integrated assault on all the civic problems of a metropolitan complex, where seven million people jostle with each other

to earn a living, is just beyond the means of an under-developed economy. Lastly, Calcutta's living problems can never be solved through civic measures alone. Even Tokyo could not do it with all the technology and finances at its disposal.⁹ A city which stands like an oasis in a vast desert of underdevelopment with stagnating economy and urban growth develops a spell and magnetism which have to be broken only through countermagnets. Such countermagnets can be created only through an integrated and planned regional economic growth. For, in the final analysis, the demographic size of Calcutta is the key to all the civic problems in the city. Every drought, excessive rainfall and crop failure in the region around Calcutta is marked by substantial swelling of the steady influx of people into the city. The countermagnets should not be conceived only in terms of cities and towns, as western planners would have us believe. A steadily growing agriculture with multiple cropping introduced can absorb on land itself a labour force at least three times the existing size. And a healthy growing agriculture would provide the basis for agroservices and agroindustries, not to speak of increasing the demand for all types of consumer goods among the rural population. All these taken together can alone constitute the real viable countermagnets and not just the satellite dormitory-towns as proposed by so many foreign advisers on planning.

Asoke Mitra¹⁰ laments that the city was not growing fast enough. It is true so far as it goes. But Calcutta can be allowed to grow faster only in an envigorised regional environment. Otherwise this primary city may suck all the vitals of our regional economy as it has done throughout the long two hundred and fifty years of its history.

The agony of Calcutta is the manifestation of the agony of the entire economic region it serves, and particularly of West Bengal. By the irony of fate, Calcutta, as the once imperial capital and stronghold of colonial power, was the creator and springhead of this agony. And now the countryside, neglected and exploited for over two centuries, is invading the city for jobs, food and shelter which in the existing framework it is just beyond the means of Calcutta

to provide. It is a pity that the civic problems have never been viewed in this wider context.

It is argued that Calcutta is India's city, a vital contributor to national wealth and as such the nation must come forward to save it from decay. To underscore this point, even contributions by petty money-orders and remittances from the city to interior villages are totalled up as evidence. But if a proper balance-sheet was prepared, it would be seen that all the wealth that Calcutta contributes to the nation is derived from its region which languishes silently even today so that Calcutta can get all its credit as a national hero.

REFERENCES AND NOTES

1. HARRIS, CHAUNCEY D. and ULLMAN, EDWARD L., The nature of cities, *Annals of the American Academy of Political and Social Science*, 242, November, 1945, pp. 7-17.
2. CHAMBERS'S ENCYCLOPAEDIA, Vol 2, 1935, pp. 649-51. Very revealing account of Calcutta can be found in the *Imperial Gazetteer of India*, 1908, vol 9, pp. 261, 263-70.
3. CHAKRABORTY, S. C., Delineation of planning areas: an experiment on Calcutta 1961, *Geographical Review of India*, March 1972, pp. 1-27, One could also refer in this connection an excellent paper by the same author on identifying a multifunctional mix (*Geographical Review of India*, Vol 32, No 1, 1970).
4. STATE STATISTICAL BUREAU, *Bustee Survey of 1958-59*, Calcutta.
5. CRONIN, H. P., GULICK, LUTHER H., POLLITZER, R. and WOLMAN, ABEL, Assignment report on water supply and sewerage disposal, Greater Calcutta, WIIO Project, India 170, January 1960, pp. 3, 5, 67.
6. CALCUTTA METROPOLITAN PLANNING ORGANISATION, *Basic Development Plan for Calcutta Metropolitan District, 1966-86*, 1966.
7. —— Interim Report: Housing, Calcutta Metropolitan District, 1967, p. 13.
8. BOSE, NIRMAL KUMAR, *Calcutta: 1964, A Social Survey*, Lalvani Publishing House, Calcutta, 1968, pp. 79-84.
9. HALL, PETER, *The World Cities*, World University Press, 1969, pp. 217-33.

Peter Hall's book is a study of seven metropolises of the world which he has named as world cities. In the first introductory chapter the author deals with the metropolitan explosion which is in progress all over the world, tries to comprehend the general forces which are contributing to the continued growth of the world cities and notes that there are three forces acting in combination to bring about the explosion. These are, firstly, increase of population in each country; secondly, continued shift of man off the land into industry and service occupations in the cities, and thirdly, a large part of the total urban growth is being concentrated in the great metropolitan cities.

This explanation is related to the specific experiences of developed countries. In countries like India things are complicated by the fact that underdevelopment acts as an additional force where migration from rural areas to cities takes place in the general background of extreme agricultural backwardness and where cities have the capacity to absorb only a fraction of the rural in-migrants in productive occupations. Metropolitan explosion in underdeveloped regions therefore has distinct features whose historical roots and social and economic implications are yet to be studied in depth.

10. MITRA, Asoke, *Calcutta—India's City*, New Age Publishers Private Limited, Calcutta, 1963.

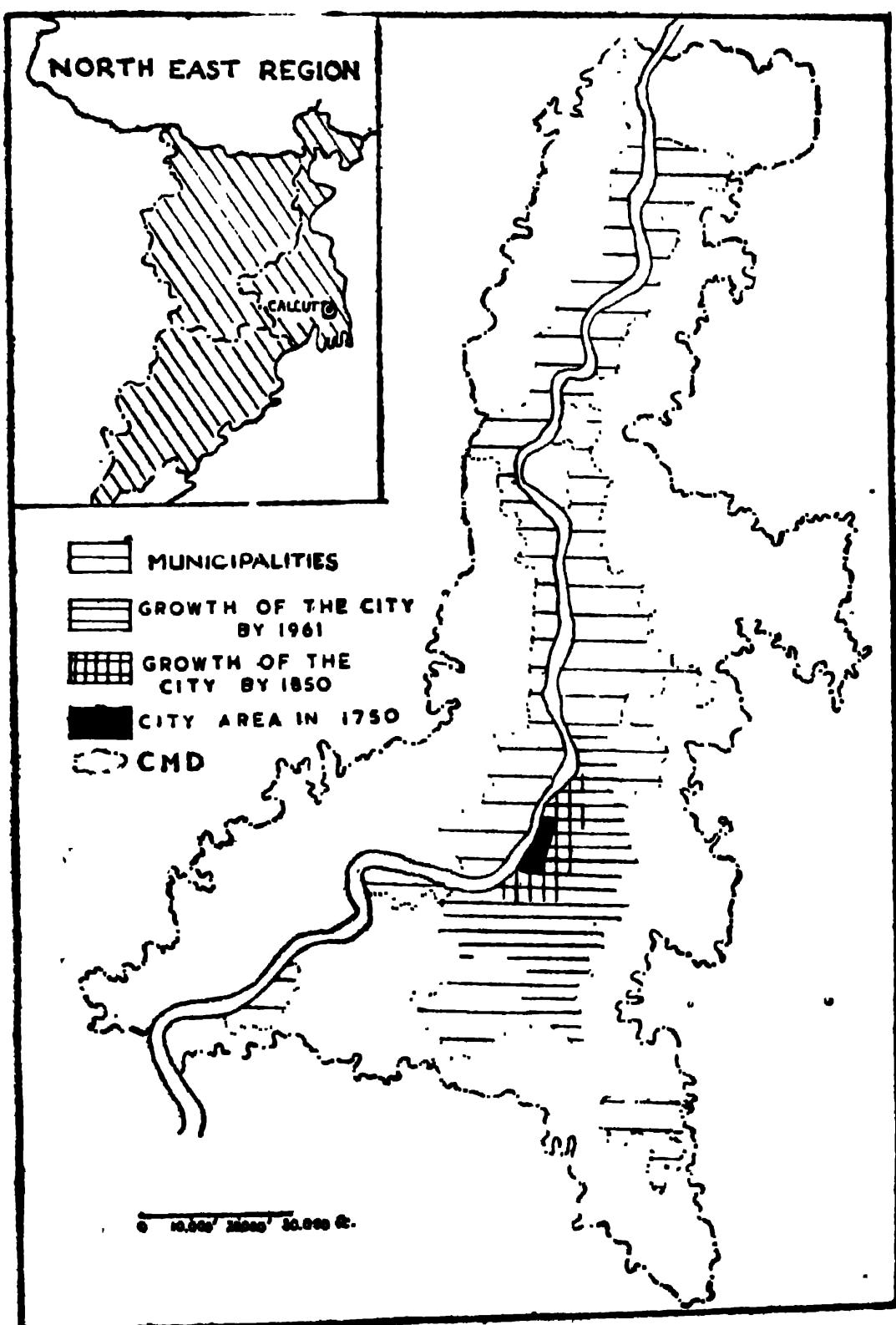
FUTURE OF CALCUTTA—ISSUES OF URBAN REDEVELOPMENT

The history of the municipal administration in Calcutta dates back to 1727 when the municipal corporation was formed with a mayor and nine aldermen. Its duties were to collect ground-rent and town duties together with maintenance of roads and drains in the white town as these were yet to make their appearance in the native town.

The first move at developmental effort came at the beginning of the 19th century with the introduction of government-sponsored lotteries, ten per cent of whose was earmarked for public works and charitable purposes. The money collected by the lottery committee was used to build a number of roads, repair old ones, excavate new tanks or fill up old ones, and build the Town Hall with the original idea to house the statues of 'great Englishmen administrators' of India. The lottery committee ceased its activities in 1836.

In 1847, about a hundred years after the birth of Calcutta Corporation, the first 'electoral system' was introduced with a board of 7 paid members, four of whom were elected by the rate-payers. This board was authorised to purchase and hold property for the improvement of the town, make surveys and maintain the roads and drains in proper order.

Another one hundred years had to elapse before Indian nationalism could make itself felt in the affairs of the Calcutta Corporation. The act of 1923, sponsored by Surendra-nath Banerjee as the minister of local selfgovernment in Bengal, liberalised the constitution and relaxed direct governmental control over the corporation. It gave wide powers to the mayor, five aldermen and ninety councillors elected by a limited franchise. Women were also enfranchised for the first time.



Calcutta city and the region.

During these two hundred years the original 38 villages of Calcutta had extended substantially by the inclusion of Cossipore, Chitpore and Garden Reach and a large portion of the suburbs lying to the east and southeast of the Circular Road.

It was after 1923 that for the first time the nationalist leaders of India recognised in Calcutta Corporation a potential seat of power to confront, in a way, the British. National leaders opted to become mayors of the Calcutta Corporation which became a platform to organise and extend the influence of nationalist organisation, a forum to express critical opinion about the foreign rulers. With the introduction of 'nationalism' in Calcutta Corporation, a kind of diarchy set in in Calcutta life. The government could shed all pretences of responsibility for the city of Calcutta though controlling the finances of the city to a large extent. The corporation, on the other hand, having in the main turned itself into a political platform, could overlook its civic responsibilities which had not yet become overburdening.

The next great leap in Calcutta Corporation administration came in 1965 with the introduction of universal adult franchise. The 1951 act had already empowered the corporation to formulate policy, directives and rules, powers which were hitherto denied to it. Seven subsequent amendments to the 1951 act led to enlargement of the rights of the corporation and its area. It should however be remembered that the Calcutta Corporation never really abandoned its right to be a political forum, in support of the government whenever the same political party ruled both and in opposition whenever the situation changed.

CALCUTTA IMPROVEMENT TRUST

The English settlers were frightened out of their wits when at the beginning of this century plague broke out in Calcutta as a virulent epidemic. A plague commission was immediately appointed which recommended clearing of the congested and insanitary areas. With this purpose in view the Calcutta Improvement Trust (CIT) was formed by an act of the government in 1911. Thus about one hundred

years after the lottery committee a developmental body was created to plan urban renewal. But by this time urban renewal had already become difficult and expensive. The CIT was given the specific responsibility to open up congested areas, lay out or alter streets, provide open spaces for ventilation or recreation, etc. It was for this purpose that the CIT was vested with special powers as distinct from the Calcutta Corporation. The sources of revenue income of the CIT are a limited number of taxes and grants provided for in the act, contribution by the Calcutta Corporation statutorily fixed under the act, income from property and investments, and miscellaneous receipts. Sale proceeds of surplus land, exemption and betterment fees and receipts from sale of buildings, together with the loans raised in the market or received from the government from time to time, constitute bulk of the capital receipts. In 1971-72 Calcutta Corporation contributed Rs 1,32,21,000 to the CIT.

A certain amount of real improvement has been achieved by the CIT but it has also accentuated class segregation by auctioning improved areas to the highest bidders. Land-speculation, which was always a lucrative business in Calcutta, has been accelerated to a degree beyond imagination. Moreover the Calcutta Corporation never really took CIT favourably. It was looked upon as a parallel organisation which was usurping part of the functions of the corporation itself.

CALCUTTA METROPOLITAN WATER AND SANITATION AUTHORITY

A third statutory authority, this time for Greater Calcutta, was created another 55 years later in 1966 in the form of the Calcutta Metropolitan Water and Sanitation Authority (CMWSA). The history of the birth of the CMWSA can be traced back to 1959 when the state government obtained financial aid from the UN Special Fund through the World Health Organisation to review the environmental sanitary conditions in Greater Calcutta and to suggest measures for improvement. The Master Plan for Water-Supply, Sewerage and Drainage, Calcutta Metropolitan District (1966-2001)

was ultimately prepared for the World Health Organisation by an engineering consortium consisting of Metcalf & Eddy Ltd of Boston and Engineering Science Inc of Arcadia, Calcutta. The master plan was submitted in 1966. Following upon the recommendations of the master plan, the state government created the CMWSA and empowered it to take over gradually all existing water-supply, sewerage and drainage services within the CMD. As and when the authority will take over any of the said municipal services in an area, the municipality concerned will cease to have any function relating thereto and will be required to reduce its rates by such percentage as the state government may determine in consultation with the municipality or corporation. The CMWSA has also been authorised to levy water charge, surcharge on water charge for sewerage, a graduated tax on properties and fees for carrying out its functions under the act.

The CMWSA has started functioning and the redevelopment of existing water-supply, sewerage and drainage measures are being attempted in different parts of the CMD. The progress of work is so slow that by the time the CMWSA completes its task, if at all, the problems are likely to overwhelm the renewal efforts. And naturally no municipality or corporation took this further encroachment on its rights favourably.

CALCUTTA METROPOLITAN PLANNING ORGANISATION

The CMPO or the Calcutta Metropolitan Planning Organisation came into existence in 1961 to secure and promote the development of Calcutta metropolitan area according to plan. A team of Ford Foundation experts were invited from the USA to advise and help in the preparation of the plan. The CMPO is not a statutory body but a directorate under the development and planning (town and country planning) department of the government of West Bengal. The CMPO has so far produced the Basic Development Plan for the Calcutta Metropolitan District, 1966-86, the Howrah Area Development Plan, 1966-86, the Traffic

and Transportation Plan for the CMD, 1966-86, and an outline for regional planning for West Bengal. None of these is in reality a detailed plan but a policy statement. Then there was a power struggle between various departments of the government, of which the CMPO was one, as to the control and authority over drafting of plans of which no department had any scarcity, and over plan execution. Would CMPO remain a planning body or be turned into an executing authority?—that was the question. Meanwhile the CMPO has been given part responsibility to construct sanitary privies in the Calcutta slums.

CALCUTTA METROPOLITAN DEVELOPMENT AUTHORITY

The fifth authority, the Calcutta Metropolitan Development Authority (CMDA), was created in 1970 and vested with the authority to plan, supervise and execute programmes of development in the CMD, with the chief minister as the chairman. The CMDA has its own cell for execution of plans and it also supervises the work of other agencies carrying out renewal of sewerage, drainage and water-supply systems, and renewal of roads and improvements in traffic and transportation. During the 4th plan period the CMDA had been authorised to spend a total of Rs 150 crore for 92 schemes.

The power struggle has only been intensified and there is yet no clear understanding as to whether the CMDA will remain a supervisory body or become an integrated planning and development organisation by absorbing the CIT, CMPO and CMWSA.

HOOGLY RIVER BRIDGE COMMISSION AND OTHER BODIES

The Hooghly River Bridge Commission was created in 1969 to plan and supervise the construction of a high-level bridge over the Hooghly river. This will be the second bridge over the Hooghly to enhance across-the-river connectivity of Calcutta.

There is also an authority created for the purpose of con-

structing a tube railway in Calcutta, the first phase of which will cost about Rs 100 crore.

One would do well to remember in this connection that the city's transport system is mainly in the hands of the State Transport Corporation (STC), the Calcutta Tramways Company (CTC) which is now a government undertaking and of a large number of private companies who run buses and minibuses as the STC and the CTC failed to service all the routes and meet the growing pressure on the public-transport system. And lastly, the Calcutta Electric Supply Company, which is largely responsible for power supply in Calcutta, is in the hands of a private firm incorporated in England.

Calcutta seems to be overcrowded with authorities vested with the task to plan development for an overcrowded metropolis.

THE OUTLOOK FOR A METRO COUNCIL

The difficulties in planning and development of Calcutta are now officially attributed to the structural defects inherited from the Calcutta Municipality Act and the Bengal Municipality Act which have forced inefficiency on the Calcutta Corporation and the various municipalities in the CMD; and also to the local selfgovernment structure parcelling out the areas of the CMD among them.

Meanwhile under the CMDA programme huge investments have already been made in various directions. The question of proper maintenance of the results of these projects and subsequent development has assumed paramount importance for which the existing municipalities are not considered at all prepared to shoulder the responsibility either financially or organisationally. The municipalities themselves, as they exist, are considered unviable and inefficient. It has been estimated that there will be a revenue deficit of Rs 3 crore per annum of the CMD municipalities to maintain the investments now being made. The government is hardly in a position to shoulder this burden over

above the burden of 56 municipalities in the non-CMD area, 3 notified areas and 5 town committees in the state.

The state government set up a committee to review the situation and make recommendations. At the end of 1972 the committee completed its work and submitted its note,¹ a summary of which might be useful to critically view the future of the Calcutta urban complex as is being planned today.

It is proposed that a 2-tier structure be set up with a metropolitan council at the top and a number of borough councils below. The entire Calcutta UA area will be divided into 23 borough councils each having on an average 2 to 3 lakhs of people. The area of the borough council will be (i) for Calcutta city, equivalent to approximately 10 wards each, which will give the city 10 borough councils; and (ii) for the suburban municipalities, almost the same area as their jurisdictions with such adjustments as may be necessary to fit in the smaller municipalities to conform to this uniform pattern. All borough chairmen are to be made metro councillors and the mayor of the metro council will be elected from amongst the metro councillors.

The powers of the metro council will include all matters of planning, development, operation, maintenance and co-ordination of all the metropolitan level activities. Certain other functions like capital investment responsibility in civic services, land-use control and environmental hygiene may also be added to the powers of the metro council.

The functions of the metro council and the borough councils are to be delineated in the following manner:

Metro Council

1. Water-supply (only production, storage and main distribution system);
2. Sewerage and drainage—trunk services, pumping stations, outfalls and treatment plants;
3. Arterial roads and their lighting;
4. Immunisation programme for epidemic control, management of health institutions;

5. Construction of schools, enforcement of educational standards;
6. Building controls, slum improvement, town planning, metropolitan parks and recreation facilities;
7. Markets, slaughter houses and other major commercial enterprises;
8. Garbage disposal.

Borough Council

1. Garbage collection and removal;
2. Water-supply distribution (local system only);
3. Pipe sewers, portable pumps for monsoons, pipe-sewer cleaning, open drains, silt removal, etc.;
4. Maintenance of roads, other than arterial roads, and lighting of such roads;
5. Food inspection and control measures, health regulatory measures;
6. Maintenance and management of schools;
7. Maintenance of slum improvement projects;
8. All parks other than metropolitan parks.

As for the finances of the metro as well as the borough councils, it is suggested that assessment of value and fixation and mutation of rates are to be done by the state government through an independent agency attached to the board of revenue. The collection machinery may be with the metro council or the borough councils as the case may be. It is expected that the state government will have to continue its financial assistance to the metro council for an indefinite period.

As for the various organisations which are simultaneously engaged in planning and development within the CMD at the present moment, it is visualised that they will come under the authority of the metro council, the CMPO will have the responsibility of physical planning, the CMWSA and the CMDA will cease to have any separate locus standi, and the CIT and the Howrah Improvement Trust will be two arms of implementation of the metro council on two banks of the river Hooghly.

We have given in broad outlines the plan to reorganise civic administration in the Calcutta metropolitan complex. This plan derives its logic from the measures taken by the western 'world cities' to solve the administration problem of giant metropolitan sprawls, and as such there need not be any objection to it. But, as we have seen earlier, Calcutta's growing pains are not so much due to inadequacy of administration as to the total absence of economic and political measures of control and diffusion of urbanisation in the economic region around it. One has to basically question the suitability of laissez faire in urbanisation which still dominates all the schemes for urban development in the Calcutta metropolitan complex. This is the direct result of our leaning on to western models of the early 20th century, for even in the west controls have made their appearance now, though within the broad framework of free enterprise.

EXPERIENCES OF A DIFFERENT MODEL

City planning in the Soviet Union after the revolution was marked by the principle that growth of cities had to be strictly controlled and that planned urban development of the entire country was to go hand in hand with industrial and overall planned economic development of the USSR. The central committee of the Communist Party of USSR enunciated this policy in 1931. This also meant restricting further industrial growth in Moscow and Leningrad. In the General Plan for the Reconstruction of the City of Moscow adopted in 1935, the central planning objective was to limit the growth of the city to a population of about 5 million allowing only natural increase and cutting down immigration almost to naught. In 1960, by a decree, the Soviet government more than doubled the area of the city to include a number of suburban areas that had grown around the city. Moscow today is surrounded by two concentric rings, firstly, the ring formed by a wide belt of green areas and secondly, the outer suburban zone dotted with goroda-sputniki or satellite towns. Unlike Moscow the growth of goroda-sputniki is not totally restricted, for they are seen

as part of the programme of dispersal rather than concentration.

The Institute of the General Plan is the regional planning organisation for Moscow. It is concerned with all the civic problems in the Moscow city, problems of open space and the green belt and finally of the goroda-sputniki. What is particularly significant is that city planning in the USSR was never divorced from planning of employment and economic development which guaranteed the health of these cities as well as the health of the entire country. The three aspects of the urban development plan for the Moscow region may be summarised as follows: Firstly; the population is not to grow within Moscow city itself. With this constraint, renewal programme in the city has been undertaken on a giant scale unheard of in the west. Secondly, the green belt around Moscow, which was first proposed in 1935 and which contains a number of satellite towns, is strictly controlled. Population and industries in all the satellite towns are growing hand in hand as selfcontained communities and not just as dormitory towns. And thirdly, the nature of industries in these satellite towns is also carefully planned. Thus, what seems to be an impossible task under capitalism even with various controls, the Soviet Union appears to be confident of achieving with public ownership of land, the planned construction of houses and civic amenities within the broad framework of planned economic development.

* THE MIXED ECONOMY CONCEPT IN URBAN PLANNING

The concept of mixed economy that dominates our national life has made serious inroads into our urban planning without anyone realising it in totality. The features of such a concept are marked in all the planning initiatives taken by the government as also in the plans prepared by statutory bodies created by it for Calcutta's urban redevelopment.

Our urban development plans are hardly related to any economic development plan except in verbiage. This is writ large on plans to build satellite towns around Calcutta as

formulated by the CMPO. These towns, if brought into existence, will only add to the urban sprawl, for their tentative sites are hardly separated from the existing CMD. Even more significant than that is the fact that these towns are visualised as commuters' towns with no independent economic base of their own. There is no plan to restrict the growth of Calcutta and compensate it with the growth of viable economic centres in the region. In an economy where private enterprise runs parallel to the state sector, and where the authority to control and select sites for new undertakings to grow is not monopolised by the government, urban planning boils down to arresting "deterioration of facilities and services within the core and provide for continued growth of those areas capable of more intensive development".² In simpler words the argument is that Calcutta lacks civic amenities in as great a measure as the prospective private investors would like to have. This acts as a psychological barrier. Improvement in the services is taken as the sure way to lure further investments of private capital in the Calcutta UA.

There is yet no control on the use of land in the CMD, for this would mean encroachment primarily on the huge speculative capital in circulation in the district. The Howrah Area Development Plan, 1966-1986, envisages the maintenance of mixed land-use pattern except in small areas where complete government control and financing are utilised. "The planning task, therefore," it says, "is to develop a plan and an implementation process which will recognise the natural forces at work whilst accelerating economic growth and, at the same time, minimise noxious features that often accompany mixed, uncontrolled land development."³

Housing in the CMD has been almost totally left to private enterprise. Public housing construction in recent years has been able to meet only a small share of the total need and generally has not been oriented to those sections of the population where the need is the greatest. Between 1961 and 1965 public agencies in the CMD built only about 5000 new housing units per year. Most of these were built

under government of India schemes which require high standards, but are heavily subsidised. Therefore housing has been left to private agencies with the government "providing decent environmental conditions", and "slums must be preserved and improved rather than cleared".⁴ Thus, urban renewal programme is linked with the policy of handing over redeveloped areas to big capital to build apartment houses which would bring them maximum return through rent and lease. The task of providing homes to the homeless remains a pious wish, and urban property ceiling becomes a myth rather than a reality.

It may be pointed out here that lack of integration of town planning with economic planning or planning development of metropolitan complexes with the economic regeneration of their hinterlands is no unique distinction of Calcutta and West Bengal. The Master Plan for Delhi, 1961,⁵ and the Plan for Greater Bombay, 1964,⁶ have a similar outlook, which is not basically different from the old imperial outlook of hinterland supporting the metropolis. There is nothing relating to urban economics in the Delhi Plan. The Bombay Plan ends up with only physical development proposals. The Calcutta Plan, as a document, is more ambitious in so far as it talks about regional planning but refuses to admit that a successful economic plan is the precondition for a workable physical plan. And like our economy and as a part of it, the Calcutta metropolitan complex is faced with a crisis the solution of which lies not so much in reorganisation of the structure of municipal administration or preparation of a voluminous physical plan, as on the realisation that the urban problems of Calcutta are only manifestations of the malaise that has corroded the vitals of our economic and social life for centuries.

REFERENCES AND NOTES

1. A note on the constitution of two-tier local authority for the CMD prepared on the basis of papers submitted and discussions held by officers deputed by the government of West Bengal, Calcutta, 1972.

2. CALCUTTA METROPOLITAN PLANNING ORGANISATION, *Howrah Area Development Plan, 1966-1986*, 1968, p. 9.

- 3. Ibid. Difficulty in controlling use of land is admitted by *Calcutta—A Review on the Financing of the Metropolitan Government*, a paper prepared by state government for the Toronto conference of 1967. The review admits the existence of very large amounts of black money in the real estate market in Calcutta.

4. CALCUTTA METROPOLITAN PLANNING ORGANISATION, *Interim Report: Housing, Calcutta Metropolitan District*, 1967.

An excellent study on housing in Calcutta was done by S. N. Sen and it appeared as a book entitled *Calcutta—A Socio-Economic Survey*, published by Bookland (P) Ltd, Calcutta, 1956.

5. DELHI DEVELOPMENT AUTHORITY, *Master Plan for Delhi*, 1961.

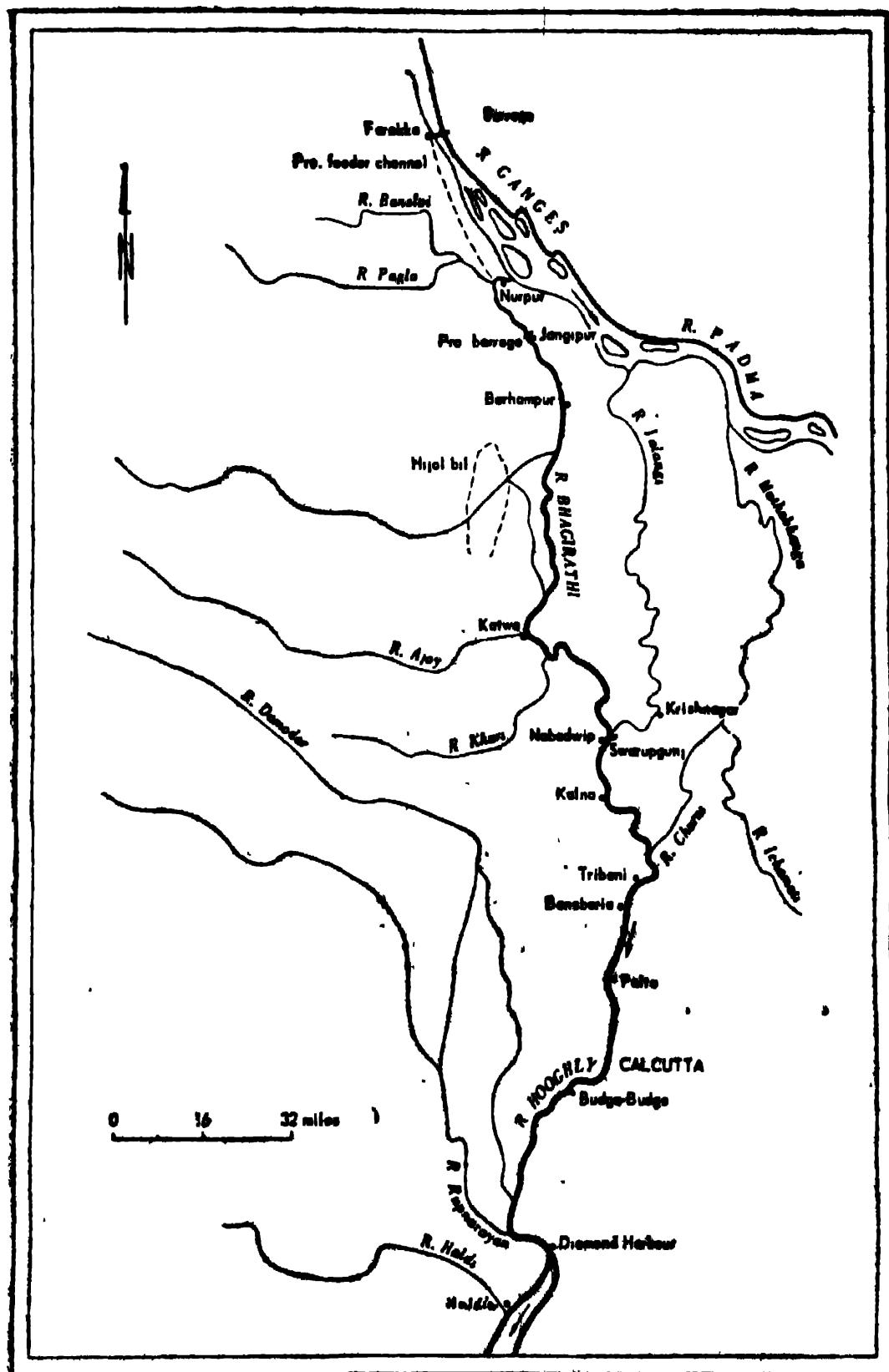
6. MUNICIPAL CORPORATION OF GREATER BOMBAY, *Report on the Development Plan for Greater Bombay*, 1964.

FARAKKA AND THE FUTURE OF SOUTH BENGAL

It was to save the port of Calcutta that the Farakka project was formulated. Already in the middle of the last century it was becoming clear that the problem of Calcutta port was inseparably linked with the problem of rejuvenation of the Bhagirathi river. Sir Arthur Cotton had at that time proposed that a dam be constructed near Rajmahal in order to divert the waters of the Ganga to flow along the Bhagirathi-Hooghly river. But nothing was done for a whole century.

At present, except during the rainy season, the water of the Ganga has hardly any connection with that of the Bhagirathi. Almost the entire water of the Ganga flows east along the Padma. But it was not so always. Geological history tells us that the Bhagirathi-Hooghly did not exist ten or fifteen million years ago. At that time it was mainly the silt from the western tableland which filled up the sea covering the Bengal basin which then extended up to Rajmahal. At that time Rajmahal was linked with the Garo hills of Meghalaya. To the north of this mountain wall the Brahmaputra river used to flow from east to west. Geologists have named this river as Indo-Bram. About one lakh years ago the Garo-Rajmahal hill disappeared due to a number of natural causes. For the first time, the waters from the Himalayas started flowing to the Bay of Bengal through the huge gap thus created. Since then the Bhagirathi has been annually depositing crores of tons of silt to build the presentday land mass of the Bengal basin. The thickness of sediments in the Bengal basin ranges from 3000 ft to over 27,000 ft.¹ But further geographical changes have altered the situation since then. The bed of the Bhagirathi gradually rose higher than that of the Ganga. At the present moment the bed of the Bhagirathi is almost 50 ft higher

THE HOOGHLY RIVER AND ITS TRIBUTARIES



than that of the Ganga at some places near their confluence. This has prevented Ganga water from flowing into the Bhagirathi.

The three distributaries of the Ganga—Bhagirathi, Churni and Jalangi—form the Hooghly river. The Hooghly itself is divided into three reaches:

- (1) Upper Hooghly, from Nadia to Jubilee Bridge;
- (2) Lower Hooghly, from Jubilee Bridge to Hooghly Point;
- (3) Estuary Hooghly, from Hooghly Point to Sagar.

In the upper Hooghly reach, only the central Hooghly river channel is now active. The lower Hooghly reach includes a major portion of the CMD. At present within the CMD over 200 mgd (including the unfiltered water supply in Calcutta) is withdrawn from the river for water-supply purposes. Tides in the Hooghly estuary are quite strong and over the years the intensity and frequency of bores have increased due to decreasing dry-weather contributions from the Ganga seriously affecting the work of the port of Calcutta's riverside berths, moorings and jetties. The Hooghly is tidal for its entire length and in the dry season the tidal limit extends above Swarupganj (80 m below Calcutta). With a good monsoon flow the tidal influence ceases to be felt at Akra (8 m below Calcutta). The Hooghly river has a total catchment area of about 17,000 sq m, and average rainfalls in this area vary from 60 to 65 inches annually.

With its total catchment area of approximately 24,000 sq m, the average maximum discharge of the Bhagirathi-Hooghly comes to about 195,000 cfs, and when all tributaries synchronise this flow is as high as 450,000 cfs. Flows in the Hooghly river are measured by the irrigation and waterways department of the government of West Bengal, at Kalna, approximately 65 m upstream from Calcutta. Flows in the Hooghly river at Kalna presently average about 80,000 cfs in the wet season and are reduced to 1000 to 2000 cfs in the dry season.²

Calcutta is a river port on the Hooghly and it goes

without saying that the future of Calcutta is very much linked with that of the Bhagirathi-Hooghly. It was this basic premise which led to the formulation of the Farakka project. The total cost of the project will come to about Rs 156 crore. It was hoped that work on the project would be completed during 1971. Now it does not seem likely to be completed even during the fourth five year plan.

THE MAIN FEATURES OF THE FARAKKA PROJECT

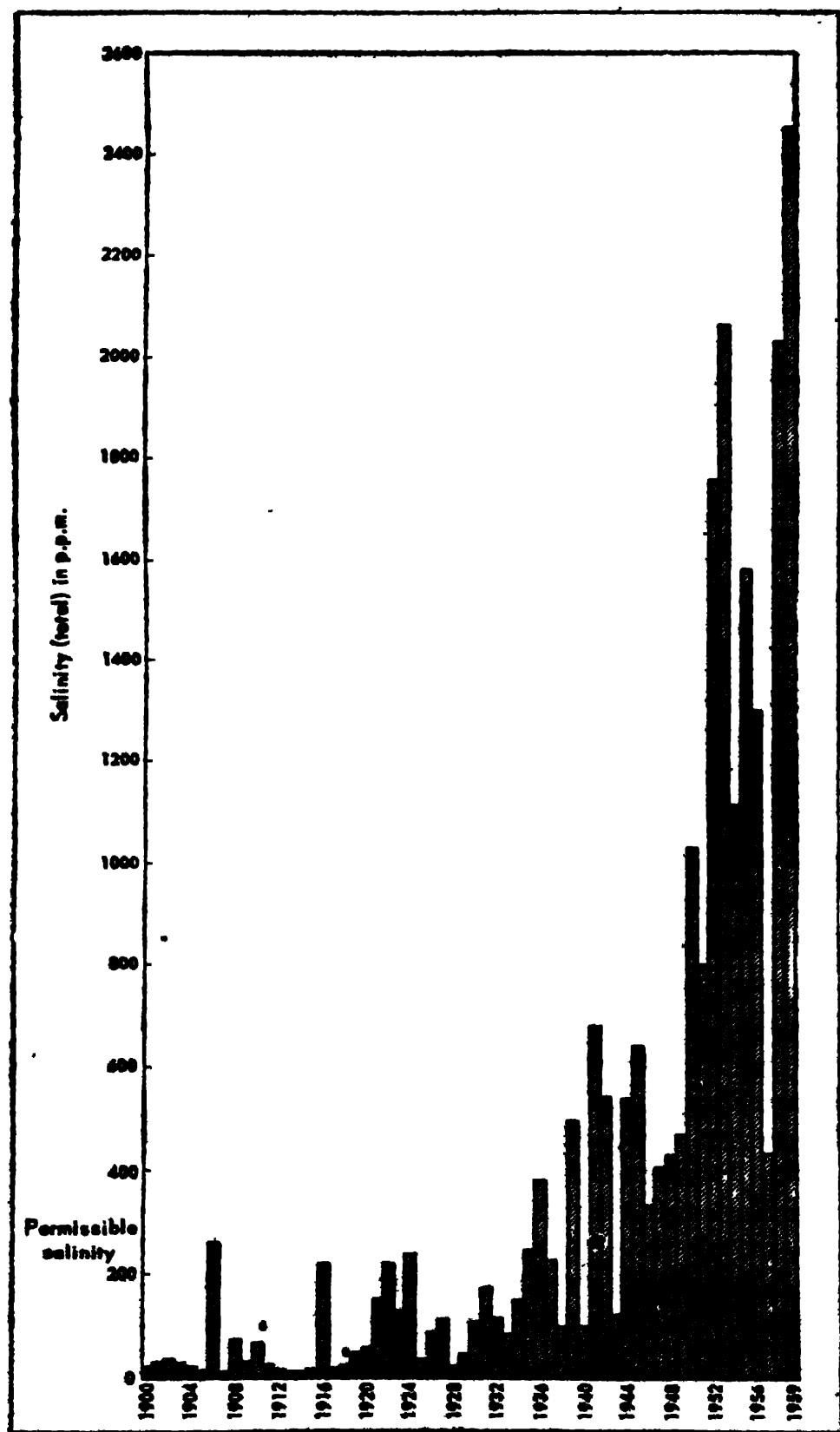
Farakka, situated on the Bengal-Bihar border near Rajmahal, is 160 m almost due north of Calcutta. Here a barrage has been constructed across the Ganga. Road and railway over the barrage have linked southern Bengal with northern Bengal and Assam. There is a cross regulator across the Bhagirathi at Jangipur above the outfall of the canal and a 42.6 km long feeder canal, taking off upstream of the Bhagirathi, downstream of the Jangipur barrage.

The main objective of the Farakka barrage is the preservation and maintenance of the port of Calcutta and of the Bhagirathi-Hooghly river system by providing continuous and controlled quantities of upland flow. The proposed programme of water releases through the barrage is as follows:

1 January to mid-March	—	40,000 cfs
Mid-March to mid-May	—	20,000 cfs
Mid-May to mid-September	—	20,000 to 40,000 cfs
Mid-September to end		
December	—	40,000 cfs

The release from mid-May to the end of December is in addition to supplies to be received from the direct head of the Bhagirathi up to its capacity of about 80,000 cfs. The water released from the Ganga into the Bhagirathi by the Farakka barrage will be relatively silt-free. With controlled upland discharge and consequent prolongation of the high flow period, the longterm deterioration of the Hooghly will be stopped, intensity and frequency of bores reduced, Calcutta will be linked with north India once

GRAPH SHOWING MAXIMUM SALINITY OF RIVER WATER AT PALTA
WATER WORKS - (1900 TO 1959)



again through the ancient water route and the water-supply near Calcutta will be improved due to reduction in salinity.

THE RIDDLE OF 40 THOUSAND CUSECS

Model studies on the effects of increased upland discharge on navigation has shown that a flow of 40,000 cfs through the Hooghly during the summer months will match the velocity of tidal flow and will prevent the deposition of tide-borne silt from the sea on the Hooghly bed. In fact it will deepen the bed of the Hooghly so that the navigable section of the river channel will attain a depth of 28 ft for over 200 days in the year. At present for only about 50 days during the monsoon months this channel reaches a depth of 26 ft. The implication of this slight improvement is expected to be farreaching. When at present Calcutta port can remain open to 15,000-18,000-ton ships for only two and a half months, increased upland discharge after the completion of the Farakka project will extend the period to 7 months. Simultaneously, dredging will be intensified in the Hooghly and some of the sharp meanders which are dangerous for shipping will be shortened. All this will relieve Calcutta city and the port of some of their major difficulties.

The barrage has been completed. North and south Bengal have been linked with a railway line and a trunk road. The work on the feeder canal is continuing. But now a controversy has arisen about how much water can ultimately flow through the Bhagirathi-Hooghly during the lean months. Central irrigation minister K. L. Rao declared in the Lok Sabha on 3 May 1973 that from January to the first week of May it would be possible to release only 20,000 cfs through the Farakka barrage. 40,000 cfs would be available from mid-May to December end. West Bengal engineers, on the other hand, maintain that during the wet season the Hooghly receives on an average about 80,000 cfs of water. In order to achieve the intended result of making the Hooghly navigable, it would be absolutely necessary to get 40,000 cfs through Farakka all the year

round, particularly during the dry season. This controversy is yet to be resolved. But even more vital is the question that is not being posed at all—whether even 40,000 cfs of water all through the year can really take Calcutta port out of the woods. This question is relevant because all the projections about what is expected of Calcutta port in future seem to show that no one is very hopeful despite all the talk about Farakka's potentialities. One can mention in this connection the opinion of the Haldia study team.³

In a report submitted to the government, the Haldia study team, constituted by the planning commission in consultation with ministries concerned, noted that in 1975-76 Calcutta's exports and imports would amount to 28.90 million tonnes, of which the share of Calcutta port would be 7.6 million tonnes and the rest would pass through Haldia. In 1969 Calcutta port handled about 7 million tonnes of goods. So they expect only a marginal increase of 6 lakh tonnes for Calcutta port even after Farakka is completed. By 1985-86 this capacity is expected to increase further and reach the 1964-65 level, i.e. about 11 million tonnes. This evidently shows that the Haldia study team is not too hopeful about arresting the decay of Calcutta port even with 40,000 cfs of water flowing down the Hooghly through Farakka.

The Haldia study team found two major groups of constraints operating on the Calcutta port,⁴ viz geography and technology. The geographical constraints included fifteen bars in the river up to the Calcutta port, limiting the draft to less than 26 ft, tortuous bends, particularly upstream of Diamond Harbour, limiting the length of ships to 530 ft and tidal bores which often incapacitate even up to 25 per cent of the berthing and holding capacity. It can be mentioned that the number of days with tidal bores in Calcutta port has increased from 70 in 1947 to 157 in 1964. The technological constraints arise from the economy of scale in the size of ships, particularly oil tankers, on the one hand and development of bulk cargo handling techniques on the other. The minimum draft requirement and length of these ships may be clear from the table below:

Table 8.1

Type of ship	Tonnage	Draft requirement	Length of ship
Oil tanker	45,000	35 ft	
Oil tanker	60,000	39 ft	
Ore carriers	25,000	32 ft	630 ft
Ore carriers	35,000	34 ft 6 in	700 ft
Ore carriers	40,000	36 ft	
General cargo	15,000	30 ft	
General cargo	18,000	35 ft	650 ft
Passenger liner	25,000	30 ft	650 ft

Thus even medium-size ships cannot come to the Calcutta port or even those which can come cannot load themselves to full capacity. This has meant a dwindling number of ships calling on Calcutta port in the course of the past decade. In 1961-62 1806 ships entered the port of Calcutta whereas in 1966-67 the number came down to 1640. The same picture is obtained if one studies the tonnage handled by the Calcutta port starting from the first five year plan. When all other ports increased their handling capacity substantially, Calcutta port was a picture of complete stagnation. Thus in 1951-52 the total tonnage handled by Calcutta port was 9.7 million tonnes, in 1955-56 it went down to 8.1 million tonnes, in 1960-61 there was marginal recovery, while in 1966-67 the figure stood at about 10 million tonnes.⁵

The study team found a solution of this problem in Haldia and not in Farakka. We will study the question of Haldia later. But first let us examine certain other likely effects of the Farakka project.

It has been often stated that Bhagirathi and Hooghly are absorbent of all floods. Never in known history has there been any flood in these rivers. On the basis of this history it is stated with almost philosophical calmness that even with added flow of water during the freshets there need not be any apprehension of floods on the Bhagirathi-Hooghly. During the rainy season, the Ganga near Farakka carries about 2.4 million cfs of water. It is only during the mon-

soon months that the Hooghly receives on an average about 80,000 cfs. The Farakka barrage is expected to divert another 40,000 cfs through the feeder canal and the Jangipur barrage. Of the several west-bank tributaries of the Bhagirathi-Hooghly, the Damodar and the Mayurakshi are controlled. The Ajoy still remains uncontrolled and unpredictable. One need not search in history to find out occasions when the Ajoy, with sudden heavy downpour in its catchment area, pouring thousands of extra cfs into the Bhagirathi, inundated large tracts and what is worse covered wide cultivated areas with infertile sand in and around Katwa where it meets the Bhagirathi.⁶ Now, with the coming into operation of the Farakka project, the Bhagirathi-Hooghly will be expected to carry double the quantum of water it used to carry in the course of the last five hundred years. We should also remember that all the distributaries of the Bhagirathi have got masked at their off-take points and that they are in a near-choked condition. What then will happen to the Bhagirathi-Hooghly flood plain when over 120,000 cfs of water flowing through the main channel gets suddenly inflated by additional water from the Ajoy? It can only endanger large tracts of Murshidabad and the other four districts lower down with uncontrollable floods.

There is yet another question which needs to be examined. As we have noted earlier, there is enormous deposition of silt in the Bhagirathi-Hooghly river, but only a small fraction of this comes from the Ganga during the three monsoon months or from the tributaries like the Ajoy or the Mayurakshi which flow down the Chhota Nagpur plateau. Bulk of the silt which has today endangered the Calcutta port is pushed in from the south by tidal water. The source of this sea-borne silt is the shallow continental shelf off the Coromandal Coast and the carrier is a powerful off-shore drift. With no upland flow, the velocity of flood tides at Hooghly mouth is almost double the velocity of ebb tides and as a result tidal water bringing in large quantities of silt can leisurely deposit it on the bed of the Hooghly river. Even during the rainy season when Bhagirathi carries Ganga water to the tune of 80,000 cfs it has been found

that the sediments contain a large percentage of sea-borne silt pushed in by the flood tides. It is argued that 40,000 cfs of water will be able to bring about a balance between the flood and ebb tide velocities during the dry season and also scour the already deposited sediments on the Bhagirathi-Hooghly bed and flush a trench in the Hooghly river bed deep enough for larger ships to ply all the year round. But the question which still remains to be answered is whether this trench will not also provide an easier passage for sea-borne silt to penetrate upstream. The fact that the port commissioners are planning in terms of more intensive dredging operations even after completion of the Farakka project seem to indicate that they are also aware of this problem.

THE HALDIA ALTERNATIVE

At the confluence of the Hooghly and the Haldi rivers, in Tamluk subdivision of Midnapur district, the new port of Haldia is coming up. Spread over 20 sq m, Haldia will have 14 sq m earmarked for port-based industrial area, 1½ to 2 sq m for the Haldia city and the rest for the port itself. The master plan for the Haldia port was prepared in 1962 in order to compensate for the deterioration of the Calcutta port. According to the project estimate committee, Haldia would cost Rs 53 crore of which the foreign component would be Rs 5 crore. The government of India sanctioned the Haldia project in December 1966, and the work has been going on since then.

Situated about 56.6 nautical m downstream of Calcutta, Haldia port will be about halfway between Calcutta and the sea. To reach Haldia from the sea a ship may encounter only 3 sand bars with no difficulty in negotiating bends limiting the length of ships and with a draft of 30 to 35 ft. Thus Haldia will have several advantages over Calcutta: (a) receive medium and big ships which cannot go to Calcutta, (b) save in the cost of shipping and in internal transport, (c) perform its duties more economically enabling it to lower Port Charges collected from the ships. The Haldia

study team had calculated that savings on account of item (d) would amount to Rs 35.42 crore by 1970-71. The study team also reported on the comparative port charges in Calcutta and Haldia⁷ which would be as follows:

Table 8.2: Differences in port charges

Commodity	Port charges (Rs per tonne)	
	Calcutta	Haldia
Rock phosphate (sulphur) potash	9.92	1.50
Petroleum		
a) dangerous	30.68	
b) nondangerous	8.12	2.5
Foodgrains	6.38	4.75
Iron ore	5.18	4.75
Salt	2.30	5.60
General cargo	5.15	15.00
Iron, steel, machinery	10.80	20.00

The structure of the Haldia port will have several components. Firstly, it will not have any berth exclusively for foodgrains. General cargo and foodgrains will be handled together. Secondly, a special type of finger jetty will be constructed at one end of the port where it will be possible to unload up to five lakh tonnes of salt and also to tranship goods from large ships to smaller vessels. Thirdly, with the help of a canal and two lock gates, a 45 ft deep wet dock is being constructed which will provide 6 berths for ships of 60,000 tonnage and 28 berths for smaller ships. Moreover there will be two dry docks for repairs. Finally, there will be the oil jetty for direct transference of oil from tankers to pipeline or vice versa.

Thus it is visualised that in 1975-76, after the completion of Haldia, Calcutta port will handle 7.60 million tonnes and Haldia, 21.30 million tonnes of cargo. A commoditywise breakdown of this figure will give the following picture:

Table 8.3: Volume of goods (export + import) to be handled by Calcutta-Haldia port complex (in million metric tonnes)

Commodity	Projection for Calcutta & Haldia—1975-76	
	Calcutta	Haldia
Rock phosphate (sulphur) potash	0.80	2.20
Petroleum	0.30	4.70
Foodgrains	0.30	2.00
Ores		5.00
Coal		5.00
Salt	0.20	0.90
General cargo	3.50	1.50
Total tonnage	7.60	21.30

THE ROOT CAUSE OF DECAY

It would serve no purpose to lament over the dwindling importance of the Calcutta port. It would be more purposeful to identify the causes, physical apart, that led to such a state of affairs in the course of just one hundred years of the formation of the Calcutta port commissioners who were to organise and look after the health of Calcutta.

When the English had first settled in Calcutta the importance of the waterways in south Bengal to Calcutta's commercial performance was noted. Till the second half of the 19th century when the railways grew, waterways remained the only means of bulk transport. The joint steamer company, which had a monopoly in river transport, was formed in 1889. It operated right up to 1957 when it was wound up. The NCAER Survey of Ganga Traffic⁹ shows that it went on rising till about 1938. The main traffic pattern was triangular in shape—Calcutta to Bihar, Bihar to Assam and Assam back to Calcutta. Calcutta sent salt, jute and cotton textiles, construction materials and machineries to Bihar, Bihar sent agricultural produce to Assam and finally Assam and north Bengal sent jute, timber and tea to Calcutta.

The decline in waterborne trade began around 1938 and finally collapsed after the partition of the country. Searching for the causes of this decline and collapse D. K. Bose and

S. K. Banerjee¹⁰ question the assertion that this was due to losses on the river services as a result of competitive alternatives offered by the railways and improvement in the road-transport services. According to them, deterioration in channel characteristics and "other things like generation of traffic, size of fleet etc., remaining same, the dislocation of route (due to partition—S.M.) could not but adversely affect the profitability of the enterprises engaged in the transport activities". K. Srinivasan¹¹ on the other hand maintains that the joint steamer company had not cared to modernise its fleet and streamline its operations to be able to withstand rail and road transportation better. The Ganga Traffic Survey records that the joint steamer company did not avail of 50 per cent of the traffic offerings particularly to the Calcutta-Patna line. It would thus appear that three factors combined to disrupt the water-transport system in southern Bengal: firstly, in the absence of maintenance, the channels deteriorated very fast, secondly, water transport could not survive in the face of stiff competition from railways and road, thirdly, the final death warrant of the triangular traffic system was signed by the partition of Bengal with independence. But what remains unsaid is that the English owners of the joint steamer company were themselves largely responsible for the decay of waterborne commerce as they did not modernise their fleet and streamline their operations and the administration as a whole did not want waterways to compete with railways or roads. It is clear that the overall interest of the imperial business was immediately better served by railways and roads. They were costlier than waterways but quicker and less hazardous and less expensive in terms of maintenance and development. What was more, roads and railways better served the purposes of maintenance of law and order and administration.

An indirect result of this neglect of waterways or its abandonment was the ruination of a large number of trading centres which had grown on waterfronts. But the direct result was what we are today witnessing ourselves in the decay of the Calcutta port itself. One may recall here that

the controversy between the priority of railways and irrigation which agitated the administrators in the 19th century was resolved in favour of railways as far as northeastern India was concerned. Irrigation investments were made in provinces which promised immediate and richer dividends. In northeastern India we got railways, indiscriminate bunding of rivers to protect the railway routes and construction of culverts and bridges designed to suit the needs of railways rather than those of drainage or irrigation or maintenance of the river channels themselves. Radhakamal Mukherjee¹² talked of this 'invasion of the river's domain' when he said that "in the lower reaches of the rivers, increase of population leads to construction of embankments, roads and railways, which facilitate the silting up of river beds and the change of water-courses, leaving a legacy of soil exhaustion, water-logging, and fever for the next generation". It was not just neglect of waterways of southern Bengal lured by immediate and richer dividends elsewhere, but the construction of railways as a countermeasure and all the steps which had to be taken to maintain these against the fury of a blocked drainage system in a deltaic region, that struck the death-knell on the Bhagirathi-Hooghly river system which was already straining itself to adjust with the forces of nature.

THE PALLIATIVES VS LONGRANCE DEVELOPMENT

Not that the Calcutta port commissioners did not know this obvious logic. There are ample evidences to show that engineers and experts appointed by them or other authorities to investigate the problems of port navigation time and again pointed to the right direction. Between 1853 and 1947 there were eight major investigations of the ills of the Calcutta port led by Sir Arthur Cotton in 1853, H. Leonard in 1863, G. Robertson in 1872, L. F. Vernon Harcourt in 1896, Lindon Bates in 1899, Major Hurst in 1915, Sir William Wilcox in 1930 and Sir Claude Inglis in 1947. Apart from these individuals, the commissioners for the port of Calcutta appointed several committees and commissions

like the Hooghly commission of 1853, the dock committee of 1881 and 1883 and Stevenson Moore committee of 1919. These committees, commissions and individual experts submitted numerous proposals including shifting of the port to below Diamond Harbour, constructing a ship canal from the dock system to Diamond Harbour, etc. But nothing much was done except certain immediate and shortterm measures.

Debes Mukherjee¹³ notes that "even though the diversion of head-water supply (from the Ganga—S.M.) through the Bhagirathi-Hooghly was considered to be the only solution, the tentative schemes drawn up by the several experts who went into this problem were not implemented partly because of financial considerations and partly because of doubts expressed by the then Bengal engineers about the practicability of an engineering project in a river of the size of the Ganga. Various palliatives in the form of developing new off-takes, dredging and bunding were tried but the results were not only marginal but were not commensurate with the cost involved." One could as well say that the English knew the nature and seriousness of the ills of the Calcutta port but refused to take steps that would in the long run not only save the port and increase its longevity but favourably affect the entire economy of the northeastern region. The reasons were the same as formulated by Romesh Dutt¹⁴ about the controversy between railways and irrigation in India :

"The reasons are, that the Indian administration is very considerably influenced by the trend of public opinion in England, and not by the opinion of the people of India. English manufacturers look to the opening of distant markets in India by means of railway extension. English merchants demand fresh facilities for trade with India by new lines of communication. British houses of trade influence Indian administration, both through Parliament and by direct correspondence with the India Office. Members of Parliament urge the construction of new railway lines by frequent questions in the House of Commons. None cares for irrigation because none in England understands its

supreme importance for India. The pious intention recorded in the official report of 1873, to discontinue heavy outlays on new railway lines, was soon forgotten. Sir Arthur Cotton was ridiculed as an enthusiast and a visionary. The Famine Commission's Report slept in official archives. New railway lines were pushed on vigorously beyond the urgent needs of India, and certainly beyond her resources."

Thus the English were after immediate gains with as little investment as possible. If palliatives could do that, they were for palliatives. Therefore when they left India they handed over a port that had already gone beyond repairs through years of imperceptible vandalism.

FARAKKA AND THE ECONOMY OF THE REGION

One might have expected that after independence, when partition had so largely disrupted the economy of the region, the authorities concerned would have gone out of the framework of mere palliatives once and for all and considered the problem of the Calcutta port in its wider context. Unfortunately our planners also confined themselves to piecemeal solutions of the port's immediate problems till they assumed such proportions as to reach the dead-end. And as the region around Calcutta, or more appropriately its hinterland, did not get any priority in economic planning, the rejuvenation of its rivers and waterways never appeared as an urgent necessity. Even when Farakka was planned it was conceived only as a measure to save the port of Calcutta rather than as an integrated scheme for the regeneration of the Bhagirathi-Hooghly river system, without which the project might create more problems than it solves.

We have already discussed about the problems which Farakka project might bring about in the life of southern Bengal. Here we confine ourselves to pointing out that the river system in a deltaic region, and for that matter everywhere, hangs on a very delicate balance created by nature at a given moment. This balance, disturbed at one point, must get its compensation elsewhere. That is the logic of nature. Radhakamal Mukherjee¹⁵ wrote:

"A river and drainage system is an integral whole. There is a nicely adjusted balance, albeit a shifting one, established among the various feeders, distributaries and channels of a river system. Even the numerous little water courses, which connect the rivers with the swamps or drainage reservoirs in the interior, and ramify through wide stretches of rice-fields, play their part in maintaining the balance between the inflow and egress of vast volumes of water during the rainy and dry seasons. The silting up of the bed of a particular river or change in its course, and alteration in the level of a drainage reservoir or of the tides have far-reaching effects on topography, agriculture and the river system as a whole."

Thus diversion of river-flows by construction of canals, building of roads, railways and embankments are reflected "in the prosperity or adversity of agriculture in the down river areas, in the silting up and change of direction of old rivers, in the emergence of new rivers, active in their delta-building functions, and finally in the estuarine conditions favourably or unfavourably for ocean traffic". Awareness of this logic of nature is to be vainly searched for in the Farakka project. It was absent in the planning of the DVC. N. K. Bose's¹⁶ warning that since 1958, the year DVC flood-control operations came into action, the bed level of the Rupnarayan tidal basin was rising very pronouncedly and that it would "affect adversely the navigability and salinity of the river Hooghly upstream of the Hooghly Point as this will force more of the tidal influx through the Hooghly channel" should have been kept in view when planning Farakka.

Bhagirathi-Hooghly is the master-stream in southern Bengal. Its one single role will be to keep the Calcutta port going as against all other considerations. This would appear logical if one considered that the fate of the entire economic region hung on the functions of the Calcutta port. But now Haldia has been planned to take the bigger share of Calcutta's port responsibilities. Still the awareness that the Calcutta-Haldia complex supported by a resuscitated Bhagirathi-Hooghly river system and an invigorated re-

gional economy can alone offer a solution evades our planning.

REFERENCES AND NOTES

1. SENGUPTA, SUPRIYA, Geological framework of the Bhagirathi-Hooghly basin, *Proceedings of the Interdisciplinary Symposium*, Calcutta University, 1972, p. 4
2. CMPO, Government of West Bengal, *Master Plan for Water Supply, Sewerage & Drainage, Calcutta Metropolitan District, 1966-2001*, 1966, p. 8.
3. Report of the Haldia Study Team—it was constituted with Dr V. G. Bhatia, director of transport research, ministry of transport, GOI, as convener. The team included, among others, T. K. Malkani, chief engineer of the commissioners for the port of Calcutta, and B. A. Takku, deputy dock manager, commissioners for the port of Calcutta. The team started detailed investigation in September 1964 and submitted its three-volume report in August 1965.
4. Ibid, Vol 1, pp. 13, 15, 16.
5. MUKHERJEE, N., *The Port of Calcutta*—a short history, Commissioners for the Port of Calcutta, 1968, pp. 229-30.
6. BOSE, N. K., The Bhagirathi-Hooghly—a few remarks, *Proceedings of the Interdisciplinary Symposium*, Calcutta University, 1972, p. xiii. Dr Bose writes about Ajay river: "It is this tributary that poses the biggest problem for control of the river Bhagirathi-Hooghly specially in the navigation practices beyond the port of Calcutta. The Ajay is a mighty stream gathering all the run-offs from the Santhal Parganas, where the terrain is hilly, rainfall is copious but spasmodic and, the river flow is torrential or negligible. The total catchment area is 6760 sq km out of which less than 50 per cent is hilly and the rest flat plains in West Bengal. During the rainy season, the river channel is either in spate or runs in trickle, varying from 300,000 cusecs to about 1000 cusecs. This extremely flashy tributary of the Bhagirathi creates havoc as it debouches into the main stream at Katwa where the capacity of the latter is only about 127,000 cusecs. Such floods occurred on a number of occasions previously. Records available with the West Bengal government indicate that they took place in 1905, 1916, 1917, 1922, 1931, 1933, 1939, 1943, 1948, 1949, 1956 and 1959."
7. REPORT OF HALDIA STUDY TEAM, Vol 1, p. 102.
8. Ibid.

9. NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH, *Ganga Traffic Survey*, 1960, New Delhi.
10. BOSE, D. K. and BANERJEE, S. K., Economic activities related to the Bhagirathi-Hooghly river system, *Proceedings of the Interdisciplinary Symposium*, Calcutta University, 1972, pp. 208, 209.
11. SRINIVASAN, K., Inland water transport to and from Port of Calcutta, Bhagirathi-Hooghly-Ganga system, *Symposium on Future of the Port of Calcutta*, Institute of Port Management, Calcutta, 1969, pp. 4-11.
12. MUKHERJEE, RADHAKAMAL, *Changing Face of Bengal*, Calcutta University, 1938, p. 15.
13. MUKHERJEE, DEBES, former General Manager, Farakka Barrage Project, paper at the Institution of Engineers (India), Bengal Centre, Calcutta, 1972
14. DUTT, ROMESH, *The Economic History of India*, Vol 2, Publications Division, Government of India, 1963, pp. 398-406.
15. MUKHERJEE, RADHAKAMAL, op cit, pp. 10-11.
16. BOSE, N. K., op cit, p. xvii.

APPENDIX

SUPPLEMENTARY TABLES

TABLE 1

Towns in the district of Murshidabad in different periods considered on grounds of trade and manufacturing activity (TM), of administrative importance (A), or population size (P)

Places called towns	Period			
	1801-13	1814-55	1855-60	1872
1	2	3	4	5
1. Murshidabad	TM	TM	A	P
2. Bhagwangola	TM		A	
3. Jungepole	TM	TM	A	P
4. Coomercolly	TM			
5. Reongore	TM			
6. Kassimbazar	TM	TM		
7. Kalakapur	TM	TM		
8. Farasdanga	TM	TM		
9. Bhatpara	TM	TM		
10. Bamangachi	TM	TM		
11. Chuakhali	TM	TM		
12. Azimgunj		TM		P
13. Berhampore	TM		A	P
14. Jagunj		TM	A	
15. Jummoakandee			A	P
16. Margram			A	P
17. Palsa			A	
18. Paikur			A	P
19. Paikpara			A	
20. Nulhuttee			A	
21. Rytha			A	

(Continued on next page)

(Continued from previous page)

1	2	3	4	5
22. Bera			A	
23. Bhudevpore			A	
24. Aurangabad			A	
25. Sooty			A	
26. Gysabad			A	
27. Gowkurnun			A	
28. Burrooa			A	
29. Gobindapore			A	
30. Sherpoor			A	
31. Beldanga			A	

Source: Animes Mohapatra & Alok Kumar Dutta in 'Definition of towns prior to Indian Census—a study based on the districts of Bengal', *Bulletin of the Socio-Economic Research Institute, Calcutta*, Vol 2, No 2, April 1968.

TABLE 2

Towns in the district of Dinajpur in different periods considered on grounds of trade and manufacturing activity (TM), of administrative importance (A), or population size (P)

Places called towns	Period		
	1808	1861	1872
1	2	3	4
1. Dinajpur	TM	A	P
(a) Dinajpur proper	TM	A	P
(b) Raigunj	TM		
(c) Kanchanghat	TM		
(d) Paharpur	TM	TM	
2. Bhusi	TM		
3. Ghugudanga	TM		

(Continued on next page)

(Continued from previous page)

1	2	3	4
4. Songkol	TM		
5. Kornayi	TM	A	
6. Raygunj	TM	A	
7. Tajpur	TM	TM	
8. Churamon	TM		
9. Betona	TM		
10. Nischintapur	TM		
11. Dumdumuah	TM	TM	
12. Nayabazar	TM		
13. Kordah	TM		
14. Potiram	TM		
15. Kongvargunj	TM		
16. Shivagunj	TM		
17. Sujapur	TM		
18. Khoyerperi	TM	TM	
19. Howrah	TM	TM	
20. Tosayi	TM	TM	
21. Nawabgunj	TM		
22. Ghoraghat	TM	A	
23. Dorala		A	
24. Chumchum Mosudah		A	
25. Netpur		A	
26. Ramchandrapoor		A	
27. Jamalgunj Boozorg		A	
28. Huzrootpoor		A	
29. Tara		A	
30. Mahipal		A	
31. Berampoor		A	
32. Sumjheea		A	
33. Chuwsa Kismat		A	
34. Futtahpore		A	
35. Ruttunnair		A	
36. Hemtabad		A	
37. Beergunj		A	

Source: As in Table 1.

TABLE 3

Towns in the district of Malda in different periods considered on grounds of trade and manufacturing activity (TM), of administrative importance (A), or population size (P)

Places called towns	Period			
	1808	1847-48	1869	1872
1	2	3	4	5
1. Hyatpoor		TM		
2. Sooltangunj		TM		
3. Hurishchandrapoor		TM		
4. Bhegaul		TM		
5. Bhullokari		TM		
6. Khidurgunge		TM		
7. Dowlutpur		TM		
8. Nijgaon		TM		
9. Pranpoor		TM		
10. Arheedangh		TM		
11. Aokra	TM	TM		
12. Pokhooreea		TM		
13. Gajole		TM		
14. Kishunpoor		TM		
15. Bugdulla		TM		
16. Bamungola		TM		
17. Bhugabaree		TM		
18. Gomastapoor		TM		
19. Rohunpoor		TM		
20. Maiegunge		TM		
21. Muhecpoor		TM		
22. Kotwalee		TM		
23. Phoolwaree		TM		
24. Jot Nursing		TM		
25. Jot Gopale		TM		
26. Sonatola		TM		
27. Sooltanpoor		TM		
28. Satanundpoor		TM		
29. Jot Gureeb		TM		
30. Maldah	TM	A	P	P
31. Mungallearee				
32. Mobarikpoor				
33. Koheehutta				
34. Aying	TM			

(Continued on next page)

(Continued from previous page)

1	2	3	4	5
35. Englishbazar	TM		P	P
36. Gouri	TM			
37. Tangtipara	TM			
38. Tipjani	TM			
39. Nawabgunj	TM			
40. Sodepur		TM		
41. Shahjalalpur		TM		
42. Oo nurpui		TM		
43. Narampur		TM		
44. Sheerpur		TM		
45. Dabeepur		TM		
46. Chandpur		TM		
47. Allepur		TM		
48. Lukheepur		TM		
49. Sooltangunj		TM		
50. Allenugur		TM		
51. Tirmohanee		TM		
52. Kullecachuk		TM		
53. Kootubpoor		TM		
54. Mungunpoor		TM		
55. Lucheerumpur		TM		
56. Sylemabad		TM		
57. Rughoonathpoor		TM		
58. Augrazabad		TM		
59. Muhespoor		TM		
60. Gopalpoor		TM		
61. Raipoor		TM		
62. Boalea		TM		
63. Juliyah		TM		
64. Joteepara		TM		
65. Gaifarea		TM		
66. Mukhtoompur		TM		
67. Rameehattee		TM		
68. Seebgunge		TM		
69. Dowlatpoor		TM		
70. Khansat		TM		

Source: As in Table 1.

TABLE 4
Some Urbanisation Indicators for the Indian States, 1961

	Urban population			Share in national indicators (per cent)			
	Thous.	Per cent	Average no. of dwellers (thous.)	P.c. of large towns (1,00,000 & more) in urban pop. of state	Employment in urban branches* (% of the state's employed labour) of total population	of the urban population	of the population of the large towns
Maharashtra	11 163	28.2	42.1	60.5	10.5	9.0	14.1
Madras	8 991	26.6	26.6	37.8	8.5	7.7	11.2
Gujarat	5 317	25.8	29.4	42.4	9.1	4.7	6.7
W. Bengal	8 541	24.5	46.4	55.5	16.0	8.0	10.8
Mysore	5 266	22.3	22.9	36.8	6.7	5.4	6.7
Punjab	4 089	20.1	21.9	26.2	9.0	4.6	5.2
Andhra Pradesh	6 274	17.4	28.1	40.5	5.0	8.2	7.9
Rajasthan	3 381	16.3	22.6	37.8	4.1	4.6	4.1
Kerala	2 554	15.1	27.8	26.9	13.5	3.9	3.2
Madhya Pradesh	4 627	14.1	21.2	31.5	3.9	7.4	5.9
Uttar Pradesh	9 480	12.9	34.5	50.3	4.9	16.8	12.0
Bihar	3 914	8.4	25.6	33.1	3.9	10.6	5.0
Assam	913	7.7	15.2	11.0	4.2	2.7	1.2
Orissa	1 110	6.5	17.9	13.0	2.2	4.0	1.5
Kashmir	593	16.7	13.8	65.4	3.7	0.8	0.7
Nagaland	19	5.2	6.3	-	0.8	0.1	0.02
Delhi (territory)	2 359	88.8	786.3	90.0	30.0	0.6	3.0
TOTAL	78 736	18.0	29.3	44.5	6.9	100.0	100.0

* Manufacturing industry, construction, transport.

Source: L. I. Bonifatyeva, 'Urbanisation and formation of economic regions in India', *Problems of Economic Regionalisation in the Developing Countries*, Nauka Publishing House, Central Department of Oriental Literature, Moscow, 1968.

TABLE 5

District	No. of small towns (1961)	status of towns (1961)				Declared town	Total urban population in district as per cent of total population of district (1961)			Percentage of small town population to total urban population in district (1961)
		M	NM	C	S		Before 1951	In 1951	In 1961	
24-Parganas	21	4	16	1			5	4	12	31.8
Howrah	21		21				2	2	19	40.0
Midnapur	12	6	6				7	2	3	7.6
Burdwan	10	1	9				3	3	4	18.1
Nadia	7	2	5				1		6	18.4
Murshidabad	6	3	3				4		2	8.5
Hooghly	5	1	4				1	4	4	25.9
Cooch Bihar	5						5	5		6.9
Jalpaiguri	5		5						5	9.1
Birbhum	4	1	3					3	1	7.0
West Dinajpur	4		4				1	1	3	7.3
Purulia	4	2	2				1	1	4	6.9
Bankura	3	1	2					2	1	7.3
Darjeeling	1	1	1				1		1	23.2
Malda	1	1	1				1		4.1	9.27
										9.62

Explanation : M = municipal town, NM = nonmunicipal town, C = cantonment, S = area administered by station committee, T = by town committee, U = by union committee.

TABLE 6
Statistical economic characteristics of the states and regions of India, 1961
 (per cent)

States & regions	Area	Popu	Nationa income	Value of m. pro	Value ad. indust	Value of n.eral p	Is**
West Bengal	2.9	8.0	11.4	8.3	22.7	18.2	
Bihar	5.7	10.6	6.9	7.2	7.6	40.0	
Orissa	5.1	4.0	3.3	4.4	1.6	5.1	
1. Northeast	13.7	22.6	21.6	19.9	31.9	63.3	
Maharashtra	10.1	9.0	12.6	10.0	27.8	2.6	
Gujarat	6.1	4.7	5.5	5.4	8.7	3.6	
2. West	16.2	13.7	18.1	15.4	36.5	6.2	
Madras	4.3	7.7	7.6	7.9	8.1	2.8	
Andhra Pradesh	9.0	8.2	6.9	7.5	2.5	4.8	
Mysore	6.3	5.4	4.9	5.8	3.7	3.3	
Kerala	1.3	3.8	3.6	4.0	2.3	0.3	
3. South	20.9	25.1	23.0	25.2	16.6	11.2	
4. Assam (NE Frontier)	4.0	2.7	2.7	3.5	2.3	1.2	
Punjab & Haryana	4.0	4.6	6.3	6.3	2.4	0.1	
Rajasthan	11.2	4.6	3.7	4.1	1.1	3.3	
Jammu & Kashmir	—	0.8	0.7	0.7	0.1	—	
5. Northwest	15.2	10.0	10.7	11.1	3.6	3.4	
6. Uttar Pradesh (North)	9.6	16.0	14.9	16.8	5.6	3.2	
7. Madhya Pradesh (Centre)	15.4	7.4	6.3	7.8	1.8	11.4	
8. Centrally admi- nistered territories	5.9	1.7	2.7	0.3	1.7	0.1	
Total	100.0	100.0	100.0	100.0	100.0	100.0	

* 1962.

** 1963, the figures include neither petroleum and natural gas nor atomic energy minerals.

Source: Compiled by G. V. Sdasyuk in 'Some aspects of the formation of economic regions in the developing countries, (A case study of India)', *Problems of Economic Regionalisation in the Developing Countries*, op. cit. Table 4.

TABLE 7
Contribution to West Bengal income by districts—1960-61

	Per cent of total population	Per cent of total income	per cent of income from	
			Agriculture	Industry
<i>Lowest stratum</i>				
Darjeeling,				
Cooch Bihar,				
Purulia,				
Malda ,	12.11	6.79	10.41	3.56
<i>Second Stratum</i>				
Bankura,				
Birbhum,				
West Dinajpur	12.70	10.69	19.81	4.53
<i>Third stratum</i>				
Jalpaiguri,				
Nadia,				
Murshidabad	15.32	13.95	23.07	7.37
<i>Fourth Stratum</i>				
Howrah,				
Hooghly,				
Midnapore	24.67	23.44	22.89	27.8
<i>Highest stratum</i>				
Burdwan,				
24-Parganas,				
Calcutta	35.20	45.13	23.82	56.68
Total	100.00	100.00	100.00	100.00

Source: Government of West Bengal, *Estimates of State Income and its Regional Differentials*, West Bengal, 1965.

TABLE 8
Levels of development among districts of West Bengal

District									
	Area under double crop (p.c. of net sown area)								
Darjeeling	12.6	20.1	49.17	1.69	287	8	251	8.80	3.34
Jalpaiguri	9.2	22.6	49.39	1.13	192	6	222	1.73	3.92
Cooch Bihar	20.4	4.2	86.79	2.40	210	5	148	1.55	0.16
West Dinajpur	23.5	3.0	87.85	2.26	171	5	107	0.47	0.39
Malda	28.1	5.3	66.48	12.81	138	6	119	0.60	0.03
Murshidabad	41.4	16.0	68.92	11.02	160	13	188	1.61	0.20
Nadia	47.7	1.9	70.98	9.01	272	18	276	3.83	0.70
24 Parganas	14.8	7.7	72.81	2.69	325	21	203	9.66	12.40
Hooghly	10.3	37.5	68.64	4.23	347	20	389	5.48	10.70
Howrah	15.3	22.8	45.12	3.24	369	31	415	20.36	22.78
Midnapore	8.9	29.9	80.57	5.43	273	8	156	1.09	1.21
Bankura	5.1	35.7	81.37	5.82	231	10	266	1.45	0.47
Birbhum	9.7	64.3	78.74	4.67	221	9	180	2.34	1.12
Burdwan	6.0	41.8	56.49	3.05	296	38	273	7.10	5.75
Purulia	7.7	35.9	86.78	3.14	178	9	121	1.83	0.42

Source: Census of India 1981, Vol 1, part Ia (ii)

TABLE 9

Population and housing supply, Calcutta Metropolitan District, 1961

	Calcutta	Other CMD urban	CMD rural	Total CMD
Population (in thousand)				
Total population	2927	3065	729	6721
Housed in institutions	274	82	10	366
Houseless	18	5	7	30
Household population	2635	2978	712	6325
Housing supply (including kutchha huts) (in thousand)				
Occupied housing units	584	592	153	1329
Occupied rooms	942	932	239	2113
Average rooms per unit	1.61	1.57	1.28	1.55
Vacant units	25	27	8	60
Overcrowding and condition				
Household population per unit	4.51	5.03	4.65	4.76
Household population per room	2.80	3.20	2.98	2.99
Units with permanent walls, (thousands)	437	387	79	904
Per cent of units with nonpermanent walls	25.2	34.6	57.8	33.8

Source: Interim Report: Housing, Calcutta Metropolitan District, Calcutta Metropolitan Planning Organisation, Government of West Bengal, March, 1967.

TABLE 10
Progress of rural electrification programme in West Bengal
(No of villages)

Item	III plan					Total
		69-70	70-71	71-72	April-June 72	
Planned programmes	2433	246	277	306	219	3481
Nonplan programmes	—	—	10	56	465	531
Total						4012

Source: West Bengal's Approach to Fifth Five Year Plan (1974-79), State Planning Board, Government of West Bengal, July 1972.

TABLE 11
Overall employment position by sectors in West Bengal
(in million)

	1961	1971
1. Primary sector		
(a) Agriculture including animal husbandry, etc.	6.29	7.25
(b) Plantation, mining, etc.	0.58	0.55
Total :	6.87	7.80
2. Secondary sector		
(a) Registered factories	0.72	0.84
(b) Nonregistered	1.0	1.16
(c) Construction	0.4	0.05
Total :	1.80	2.0
3. Tertiary sector		
(a) Public sector	0.53	0.70
(b) Private sector	2.38	2.07
Total :	2.91	2.77
Grand Total	11.58	12.62

Source: As in Table 10.

TABLE 12
Amount of goods handled by the six major ports in India
 (in 000 tonnes)

Year	Calcutta	Bombay	Madras	Vizag, Cochin, Kandla	Total
1951-52	9,736	7,600	2,190	1,988	22,514
1956-57	8,860	12,172	2,500	4,098	27,639
1961-62	9,302	14,548	3,468	—	—
1965-66	9,848	18,197	4,800	14,855	47,700
Percentage increase 1951-52 to 1965-66	1.15	139.43	199.18	397.16	111.87

Source: A. N. Bose and S. Sirkar, Planning for Calcutta Metropolitan District—1966-86, *The Hooghly-Bhagirathi Basin*, University of Calcutta, December 1972.

TABLE 13

Year	1963-64	64-65	65-66	66-67	67-68	68-69	69-70
No of ships entering Calcutta							
Port	1,828	1,807	1,623	1,640	N.A.	1,400	1,237

Source: As in Table 12.

